

APPENDIX B: GPS PERFORMANCE MEASUREMENT RESULTS

Each figure in this appendix illustrates a comprehensive summary of measured GPS performance degradation for a given receiver exposed to a UWB signal permutation. Not all scenarios were measured, as summarized in Table B.1.

Table B.1. Single-Source UWB Interference Measurement Figure List

Interference Spacing / PRF (MHz) / DC (%)	Rx 3		Rx 4	
	BL	RQT	BL	RQT
Gaussian noise	B.1.1	3.6 (Section 3)	B.2.1	B.2.1
UPS / 20 / 100, 20	B.1.2, 3	N/A	B.2.2, 3	N/A
UPS / 5 / 100, 20	B.1.4, 5	N/A	B.2.4, 5	N/A
UPS / 1 / 100, 20	B.1.6, 7	N/A	B.2.6, 7	N/A
UPS / 0.1 / 100, 20	B.1.8, 9	N/A	B.2.8, 9	B.2.8, 9
OOK / 20 / 100, 20	B.1.10, 11	N/A	B.2.10, 11	N/A
OOK / 5 / 100, 20	B.1.12, 13	N/A	B.2.12, 13	N/A
OOK / 1 / 100, 20	B.1.14, 15	N/A	B.2.14, 15	N/A
OOK / 0.1 / 100, 20	B.1.16, 17	N/A	B.2.16, 17	B.2.16, 17
50% ARD / 20 / 100, 20	B.1.18, 19	N/A	B.2.18, 19	B.2.18, 19
50% ARD / 5 / 100, 20	B.1.20, 21	N/A	B.2.20, 21	B.2.20, 21
50% ARD / 1 / 100, 20	B.1.22, 23	N/A	B.2.22, 23	B.2.22, 23
50% ARD / 0.1 / 100, 20	B.1.24, 25	N/A	B.2.24, 25	B.2.24, 25
2% RRD / 20 / 100, 20	B.1.26, 27	N/A	B.2.26, 27	B.2.26, 27
2% RRD / 5 / 100, 20	B.1.28, 29	N/A	B.2.28, 29	B.2.28, 29
2% RRD / 1 / 100, 20	B.1.30, 31	N/A	B.2.30, 31	B.2.30, 31
2% RRD / 0.1 / 100, 20	B.1.32, 33	N/A	B.2.32, 33	B.2.32, 33

B.1. Narrow Correlator Receiver (Rx 3) Results

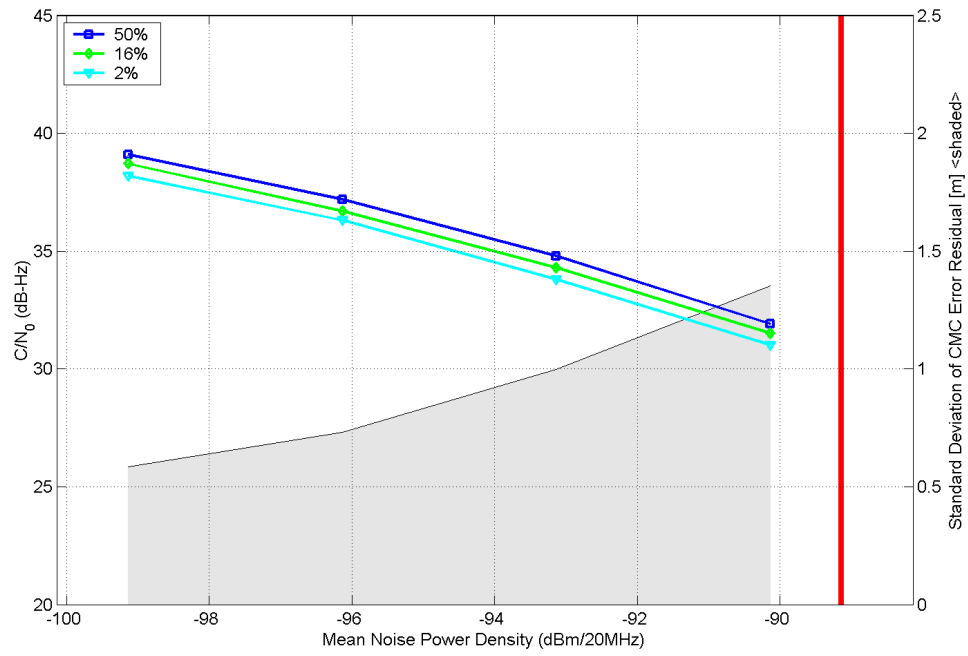


Figure B.1.1. Measured GPS parameters (Rx 3) as a function of Gaussian-noise interference.

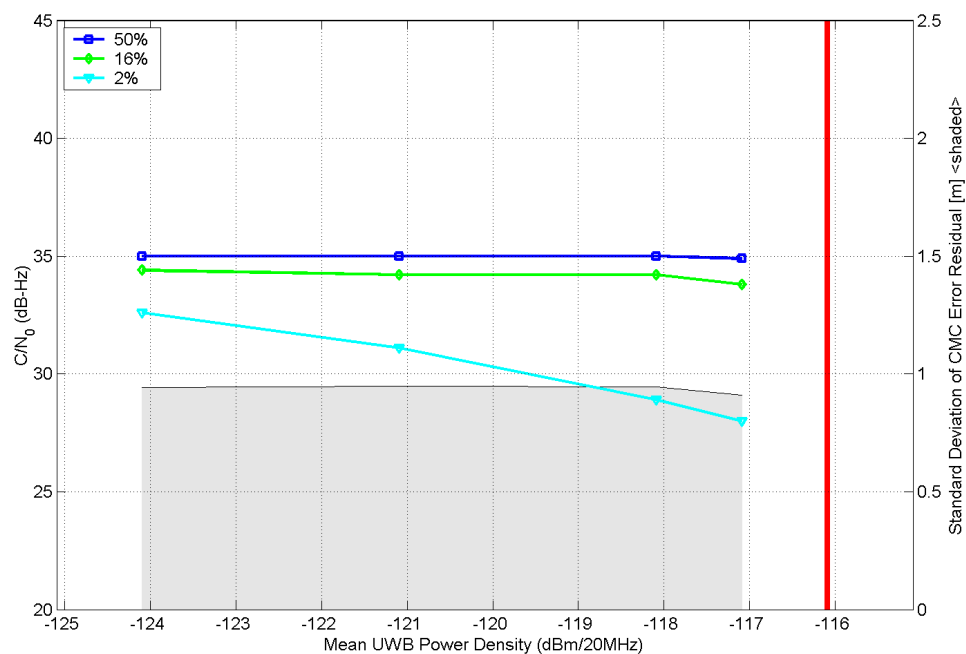


Figure B.1.2. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, UPS, non-gated UWB interference.

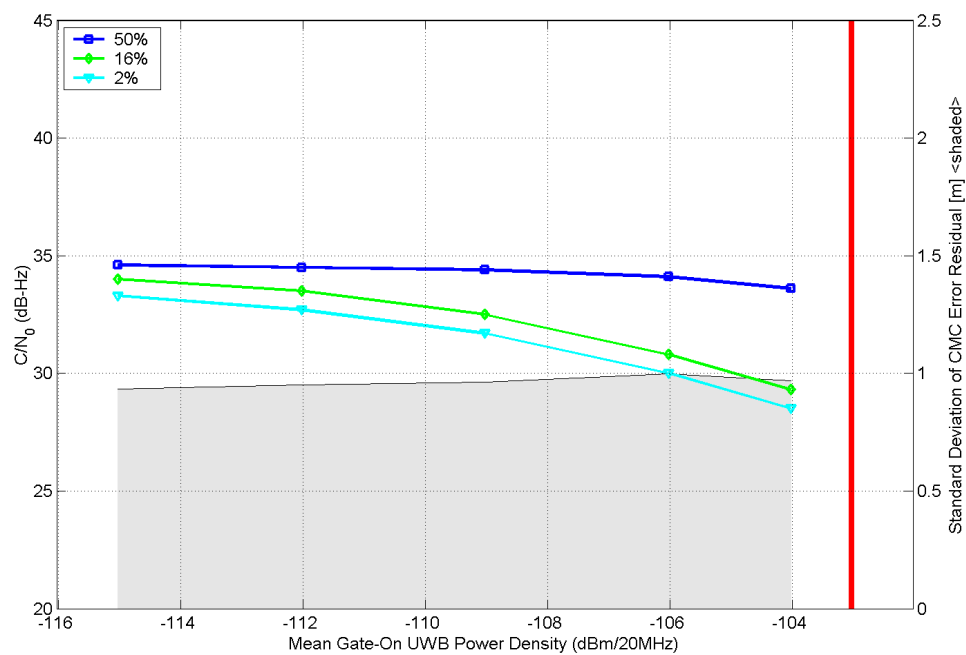


Figure B.1.3. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

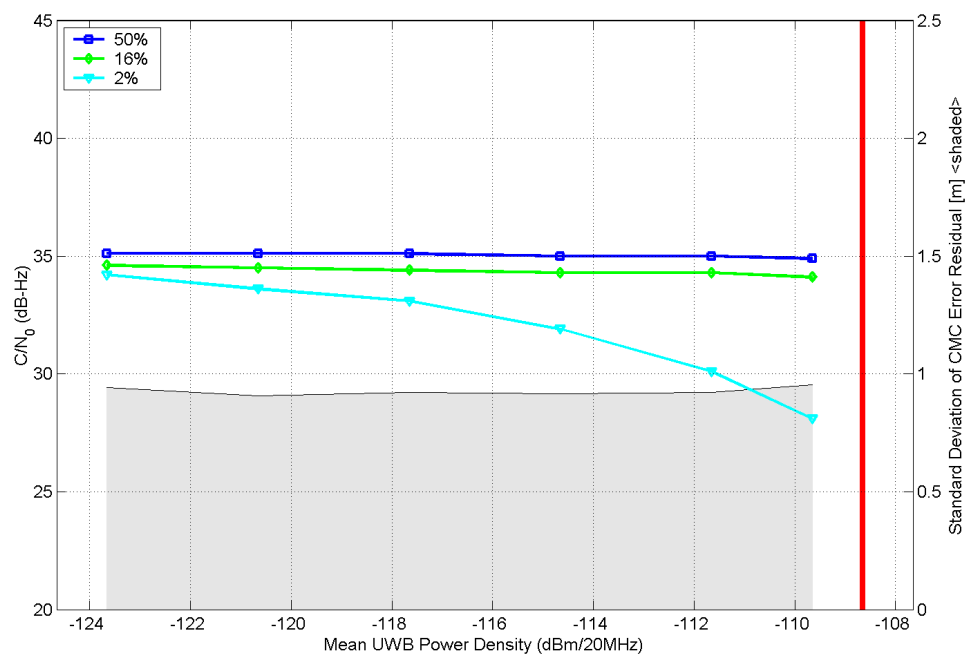


Figure B.1.4. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, UPS, non-gated UWB interference.

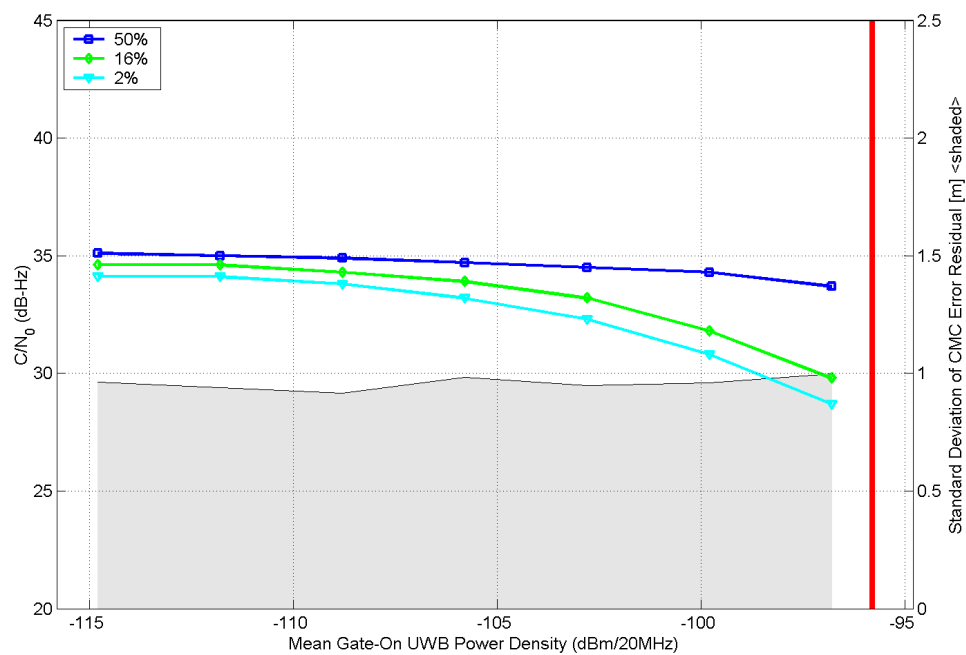


Figure B.1.5. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

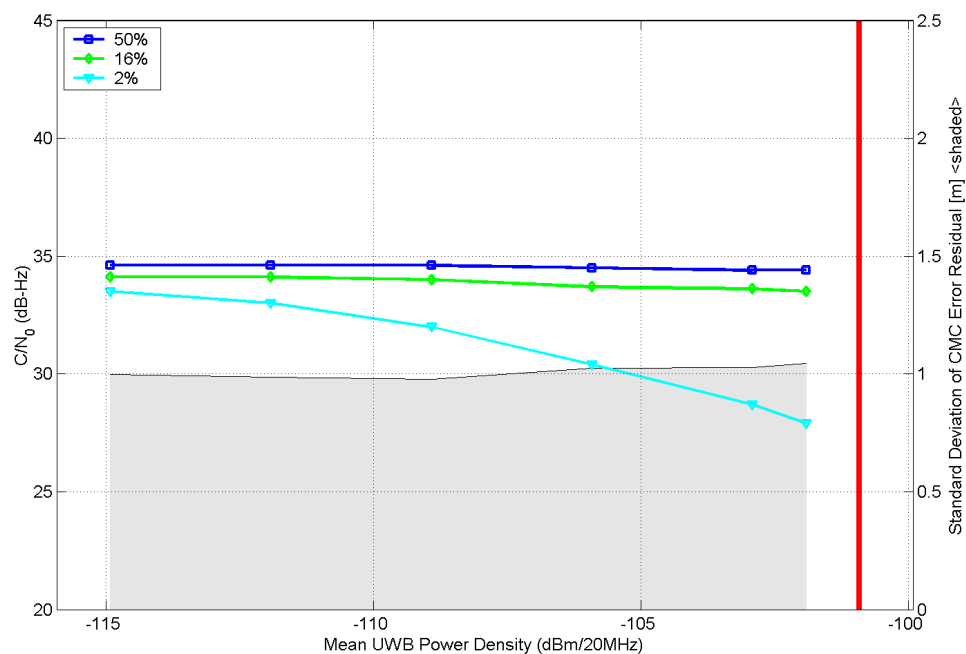


Figure B.1.6. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, UPS, non-gated UWB interference.

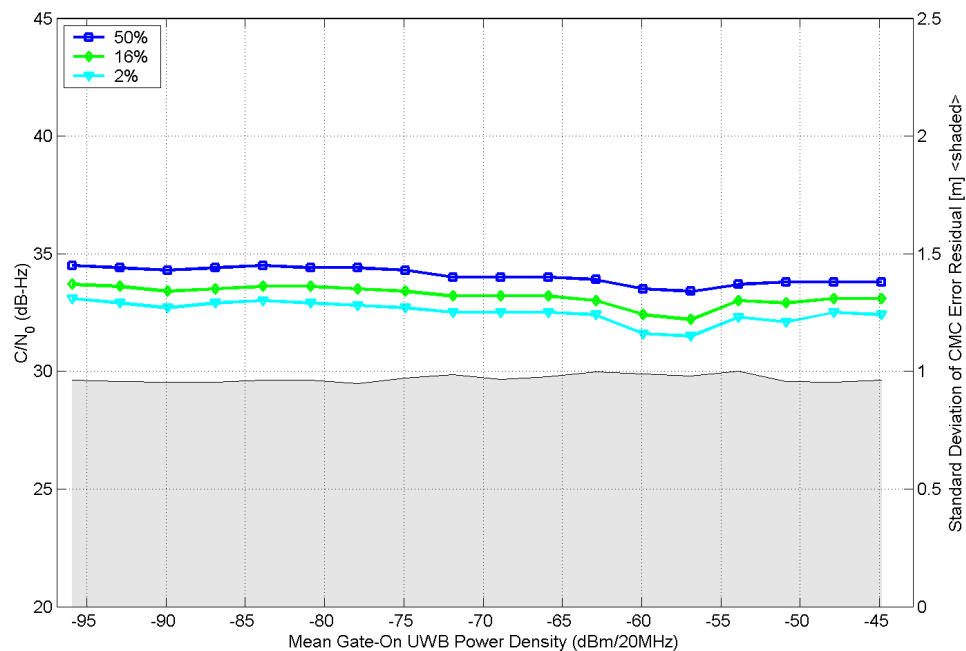


Figure B.1.7. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

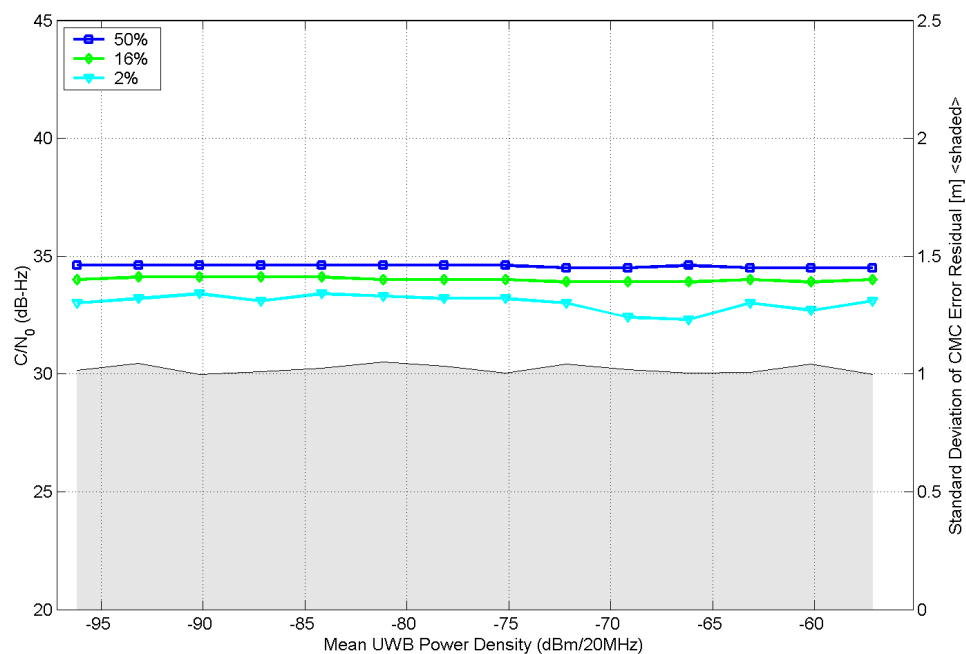


Figure B.1.8. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, UPS, non-gated UWB interference.

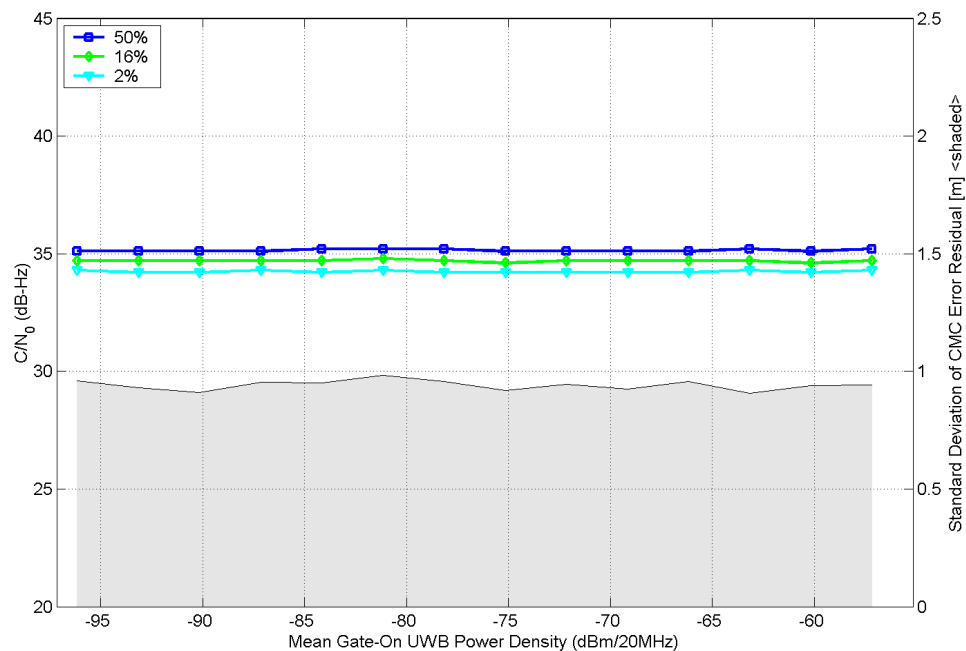


Figure B.1.9. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

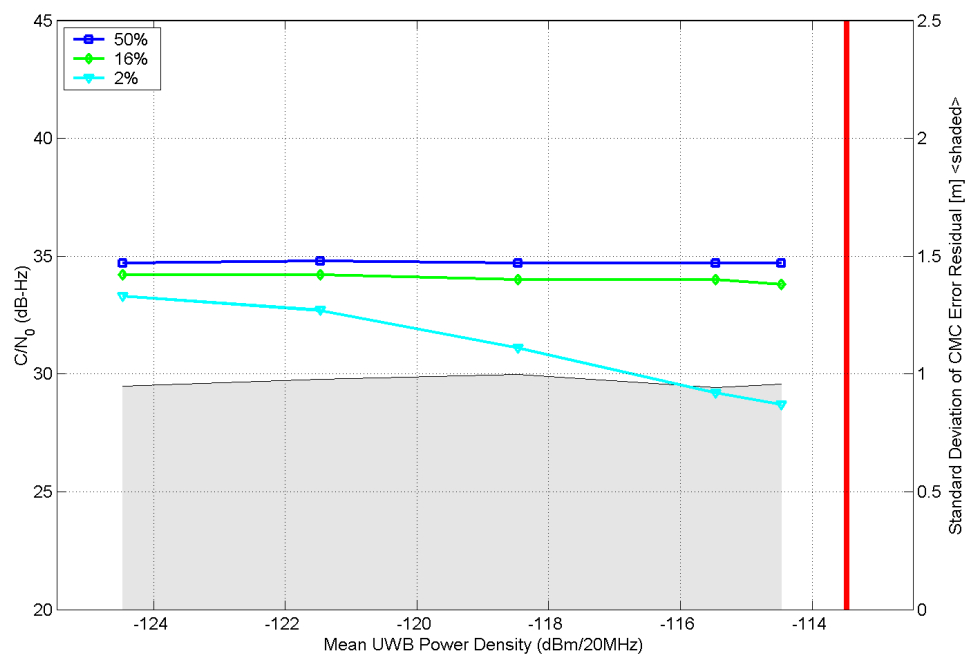


Figure B.1.10. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, OOK, non-gated UWB interference.

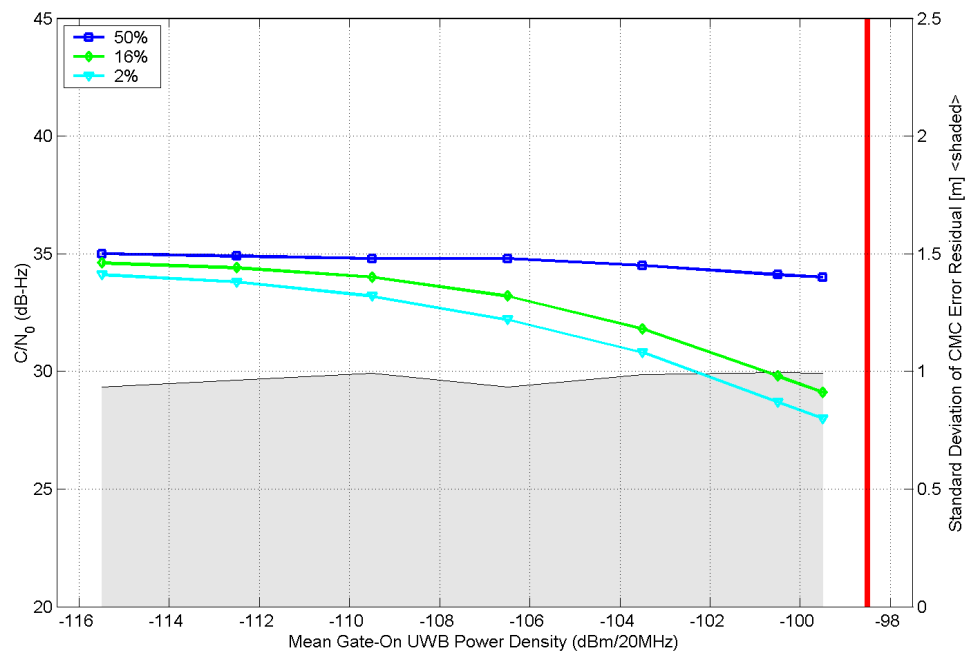


Figure B.1.11. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

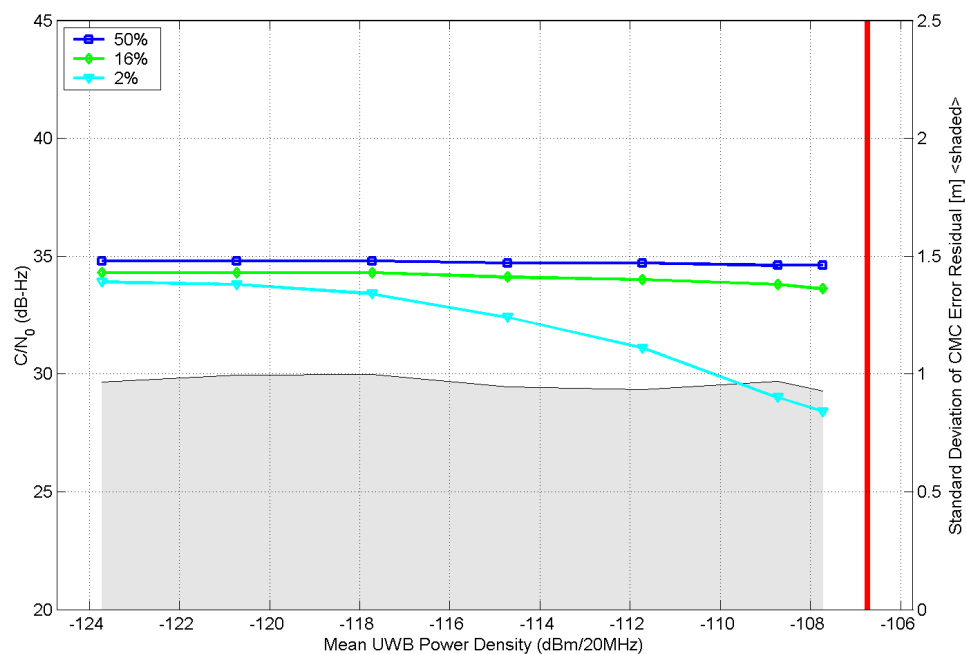


Figure B.1.12. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, OOK, non-gated UWB interference.

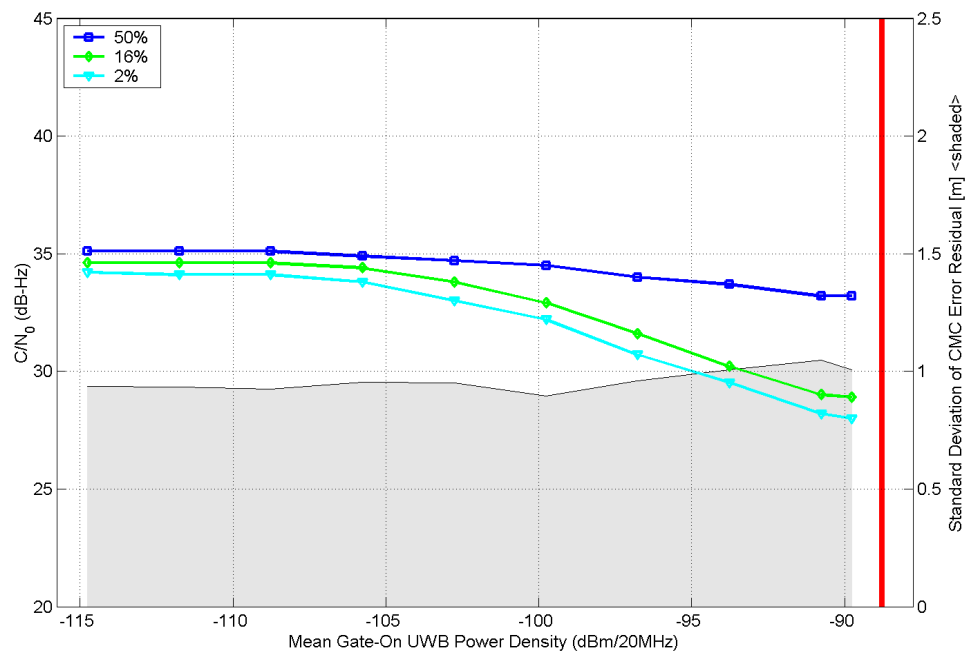


Figure B.1.13. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

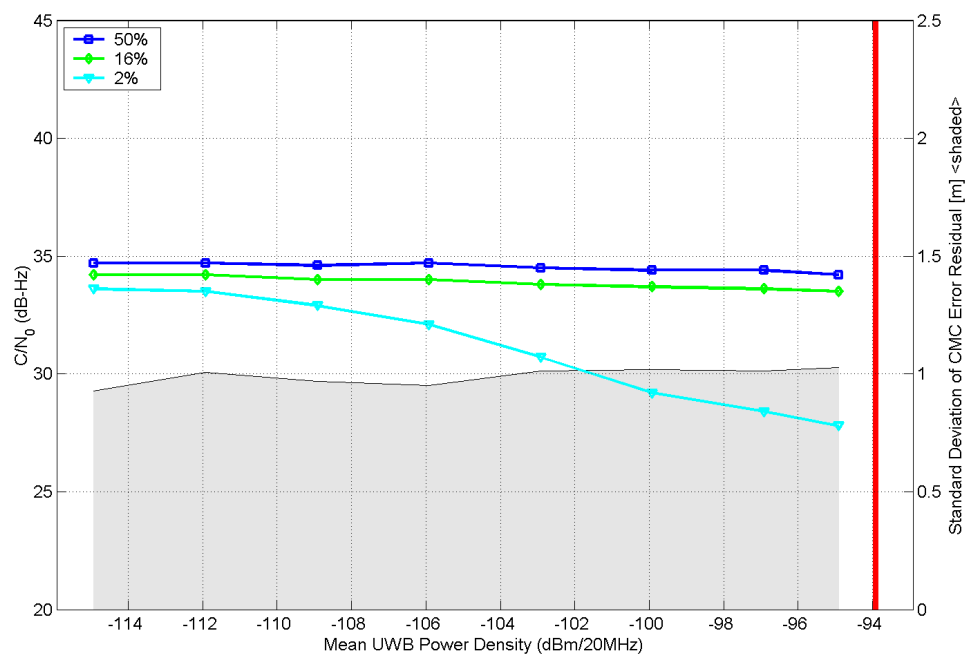


Figure B.1.14. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, OOK, non-gated UWB interference.

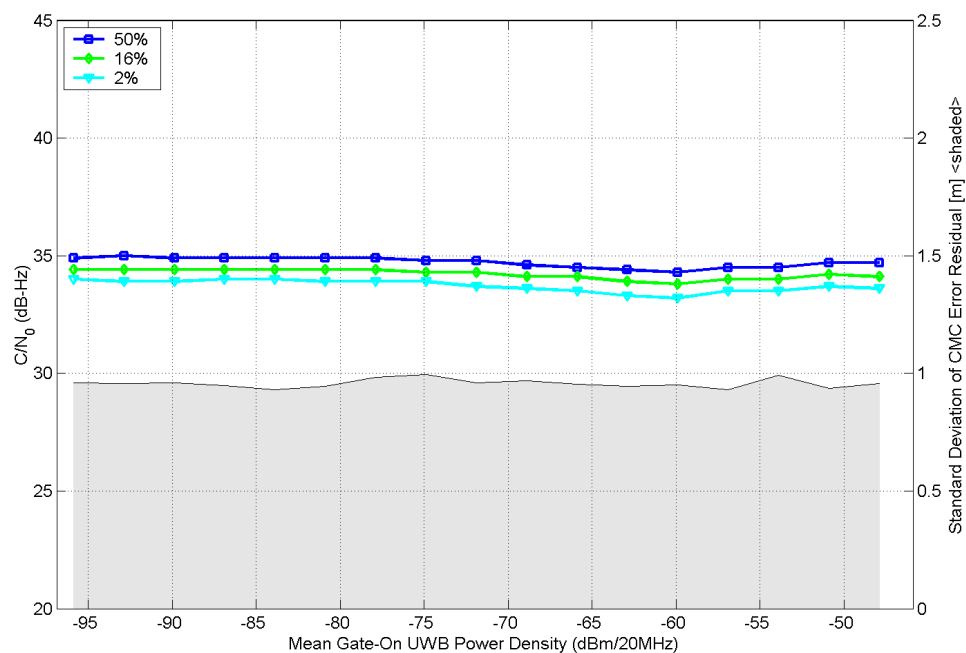


Figure B.1.15. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

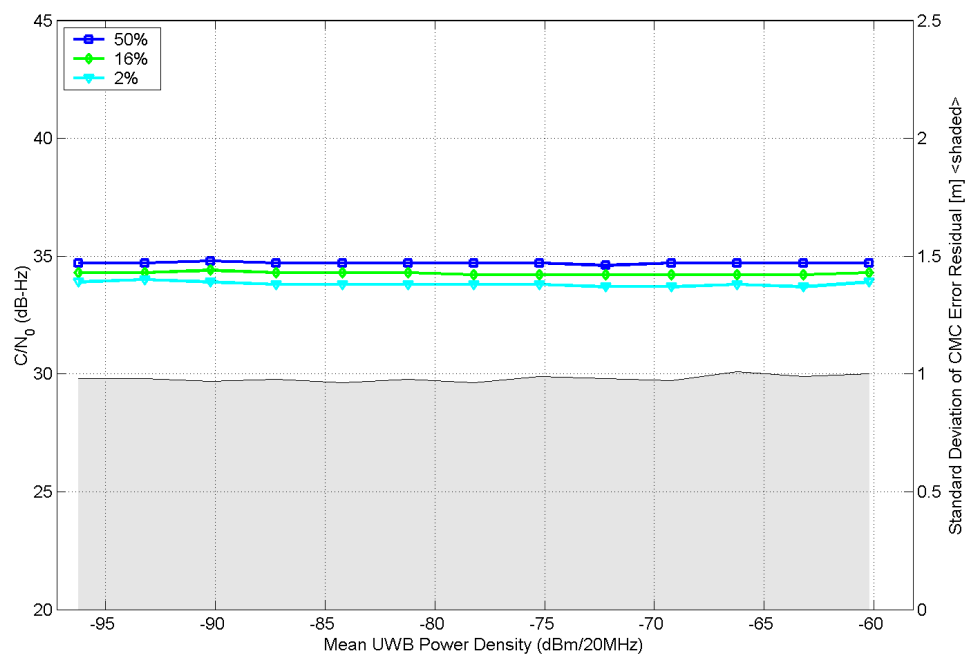


Figure B.1.16. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, OOK, non-gated UWB interference.

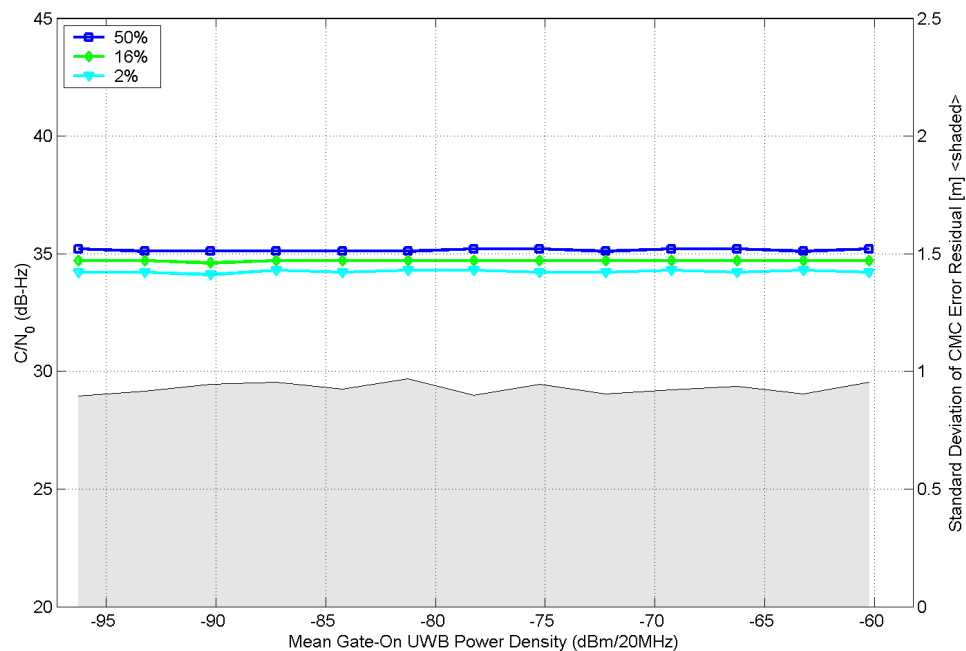


Figure B.1.17. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

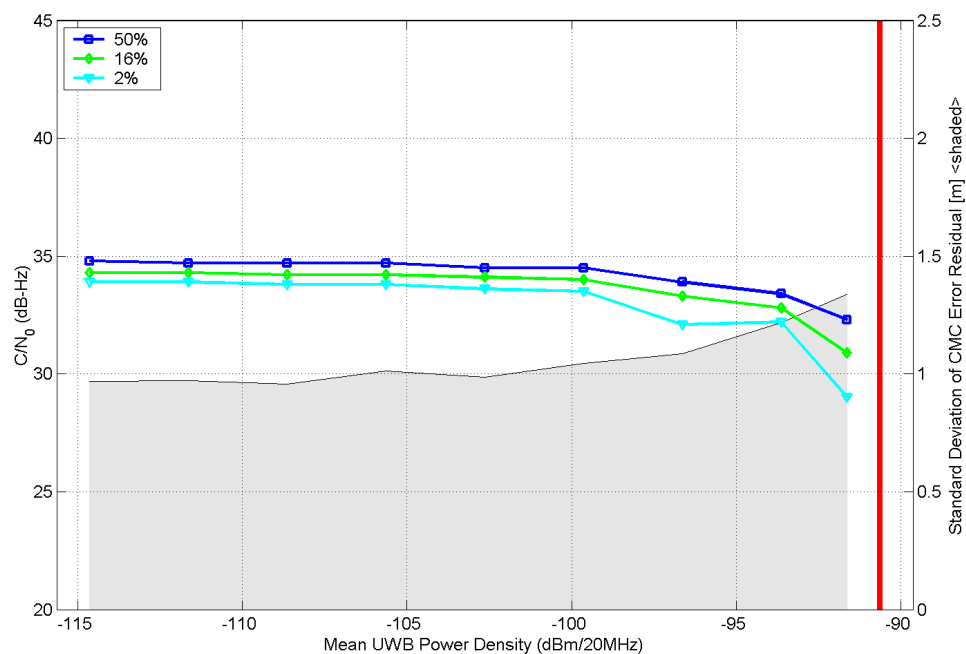


Figure B.1.18. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, 50%-ARD, non-gated UWB interference.

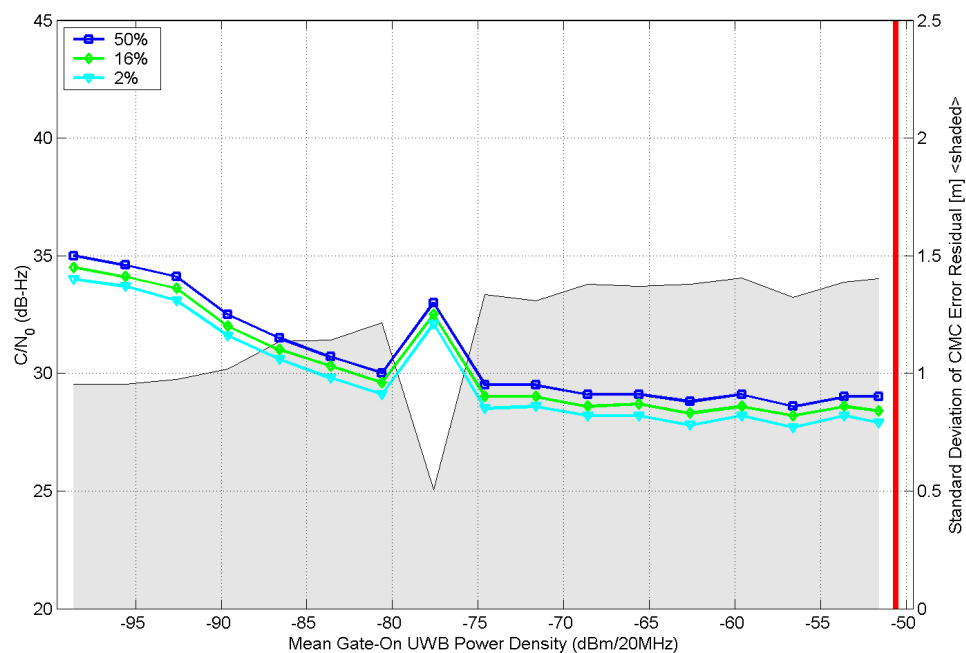


Figure B.1.19. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, 50%-ARD, gated (20% duty cycle) UWB interference.

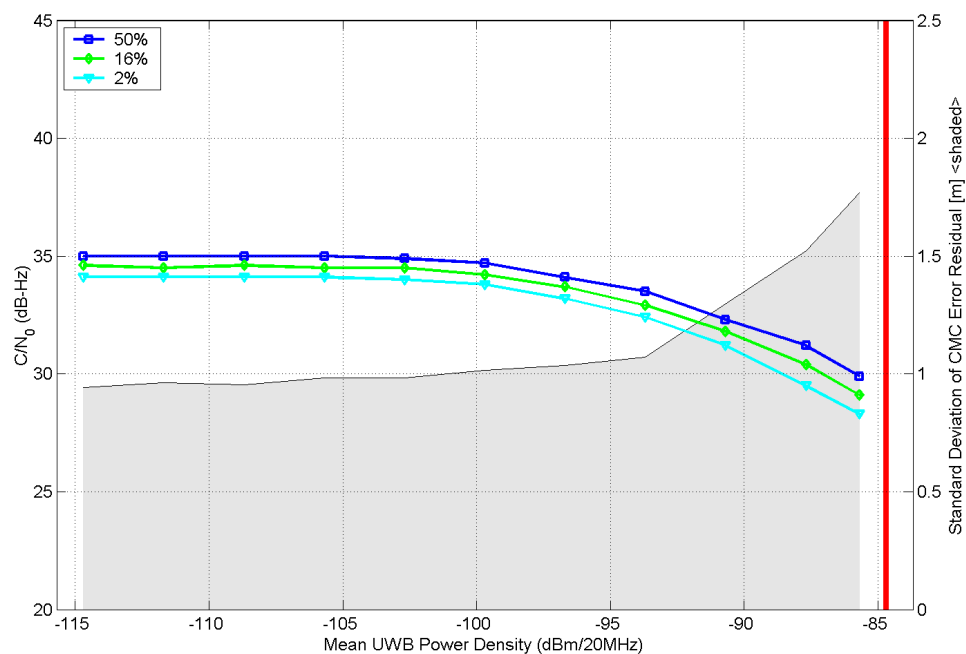


Figure B.1.20. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, 50%-ARD, non-gated UWB interference.

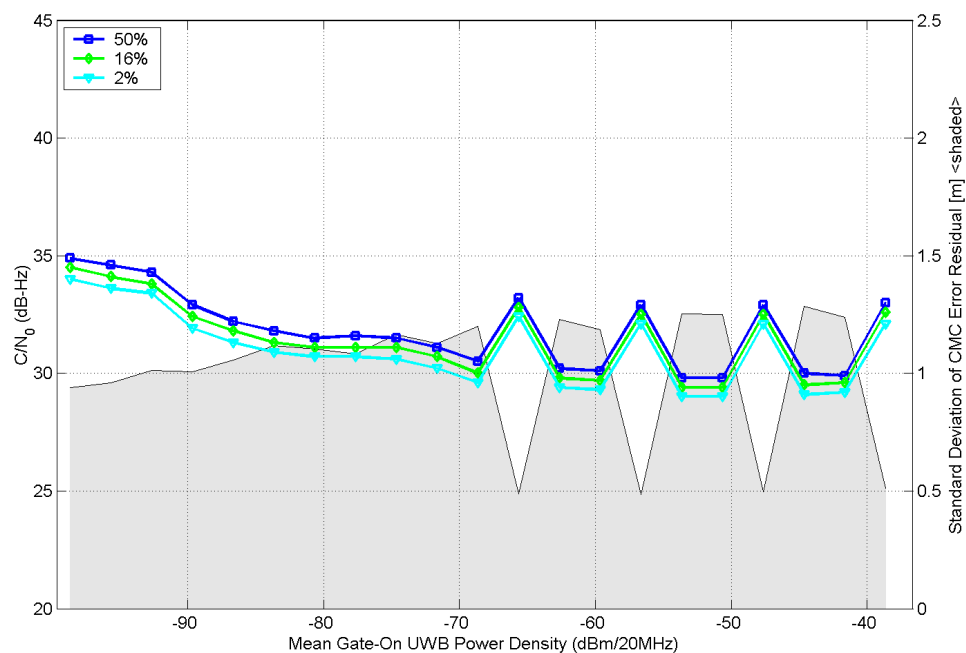


Figure B.1.21. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, 50%-ARD, gated (20% duty cycle) UWB interference.

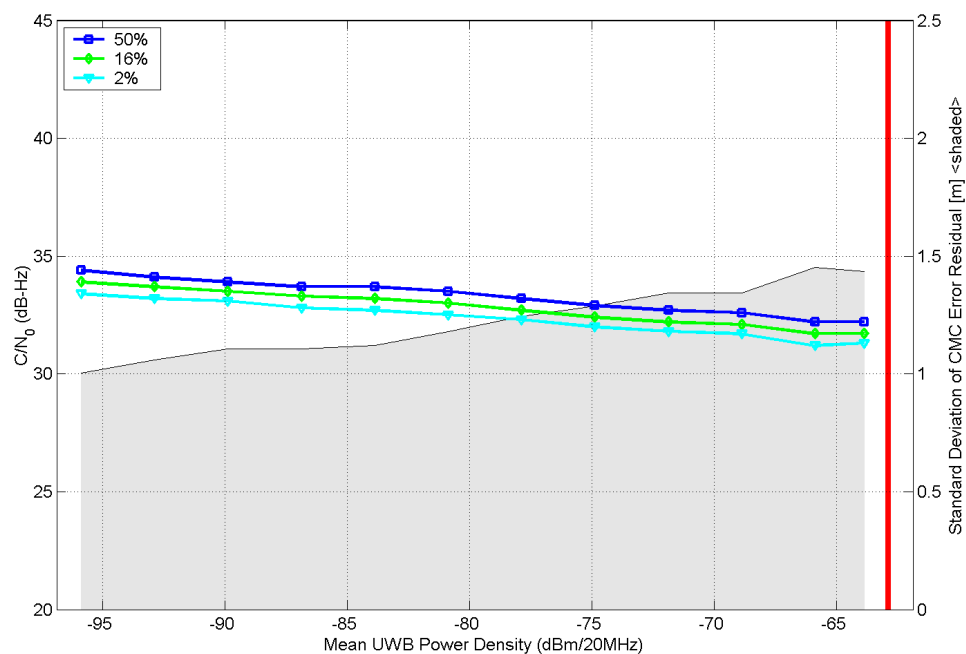


Figure B.1.22. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, 50% ARD, non-gated UWB interference.

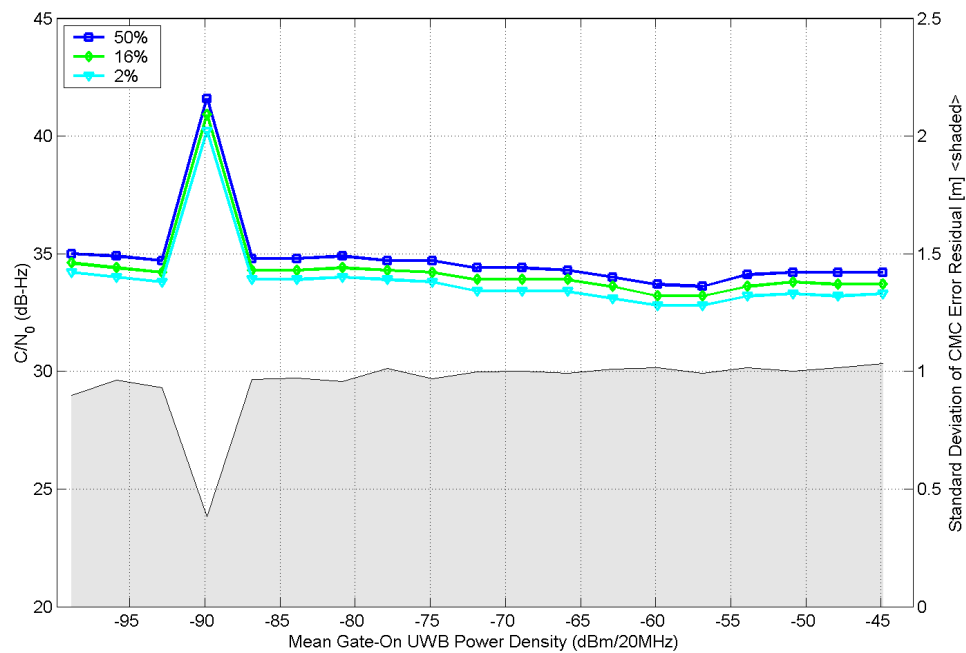


Figure B.1.23. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, 50% ARD, gated (20% duty cycle) UWB interference.

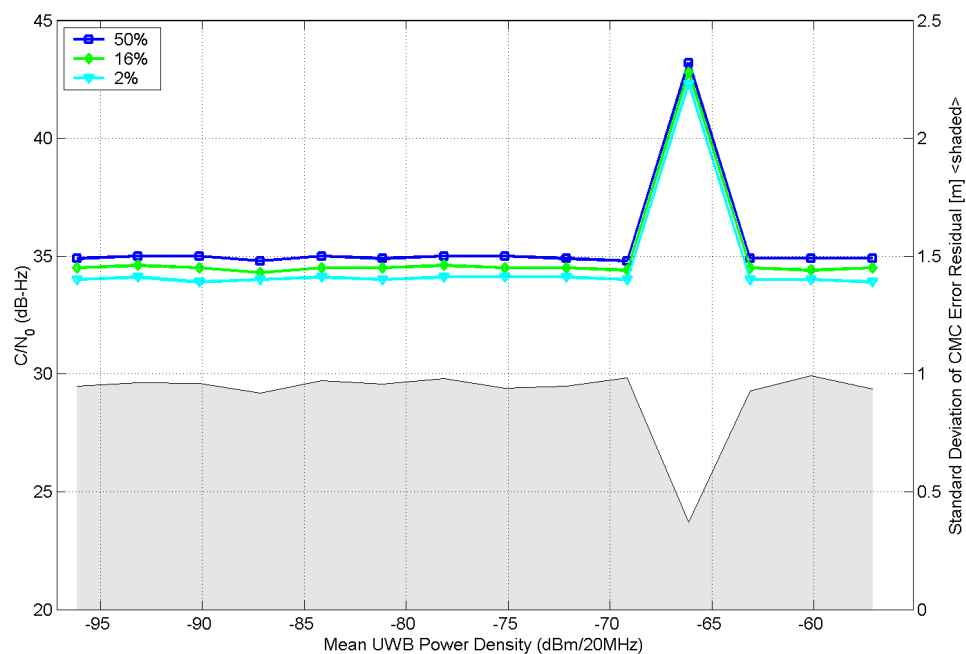


Figure B.1.24. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, 50% ARD, non-gated UWB interference.

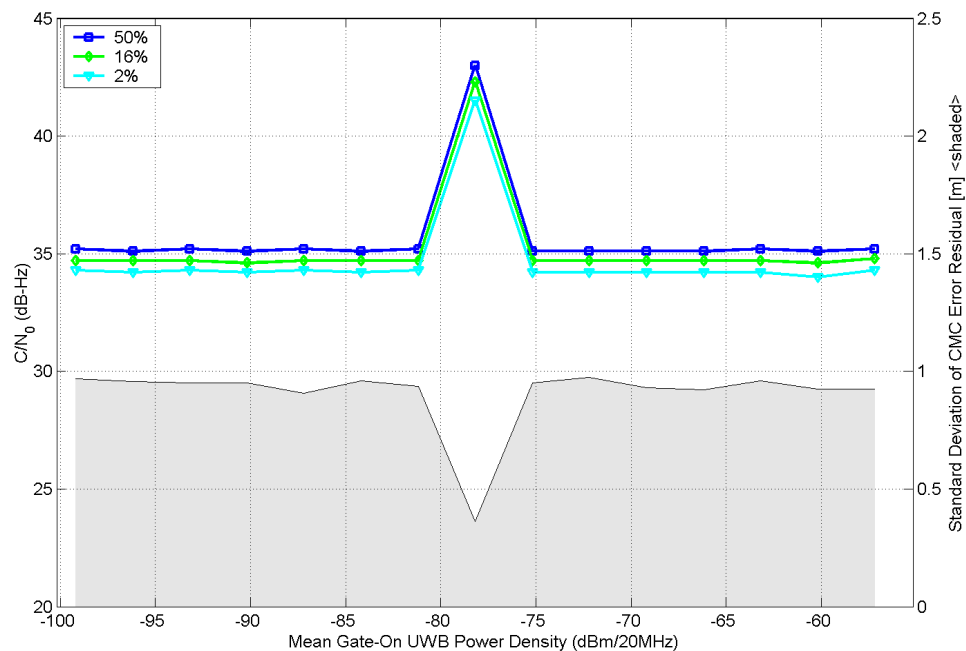


Figure B.1.25. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, 50% ARD, gated (20% duty cycle) UWB interference.

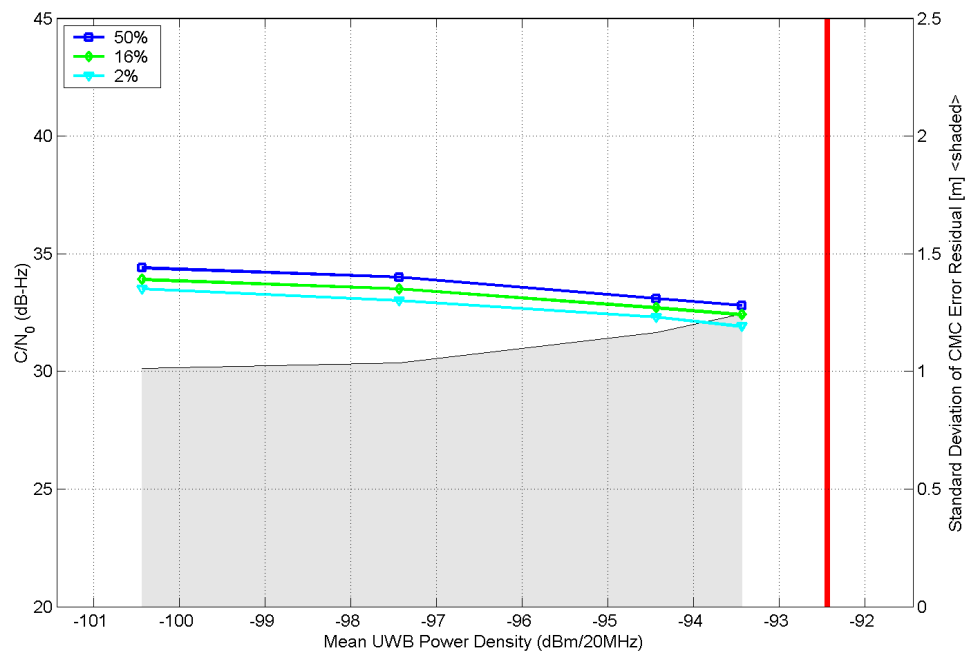


Figure B.1.26. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, 2% RRD, non-gated UWB interference.

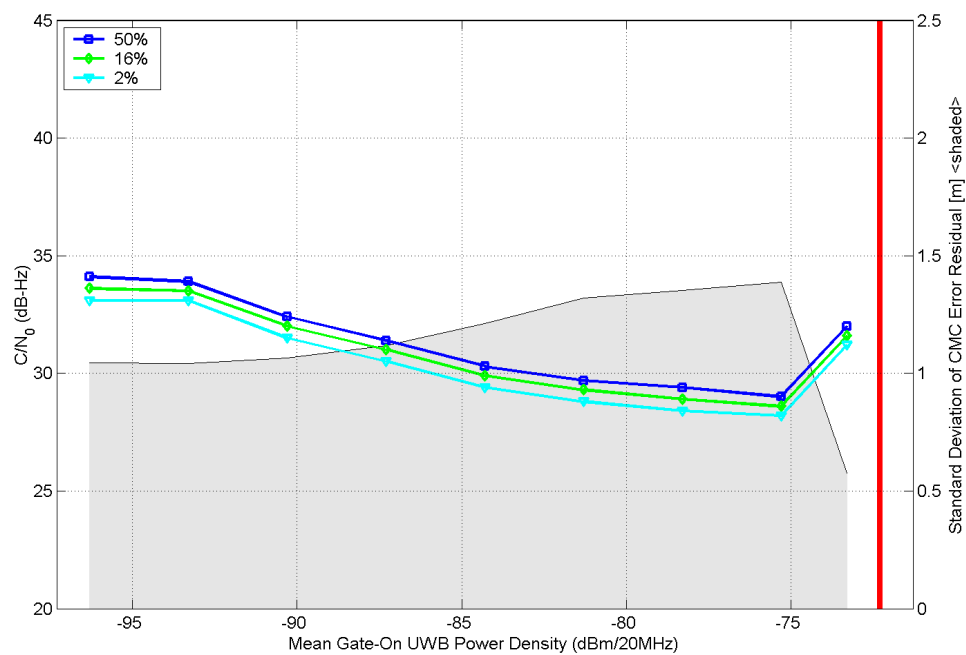


Figure B.1.27. Measured GPS parameters (Rx 3) as a function of 20-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.

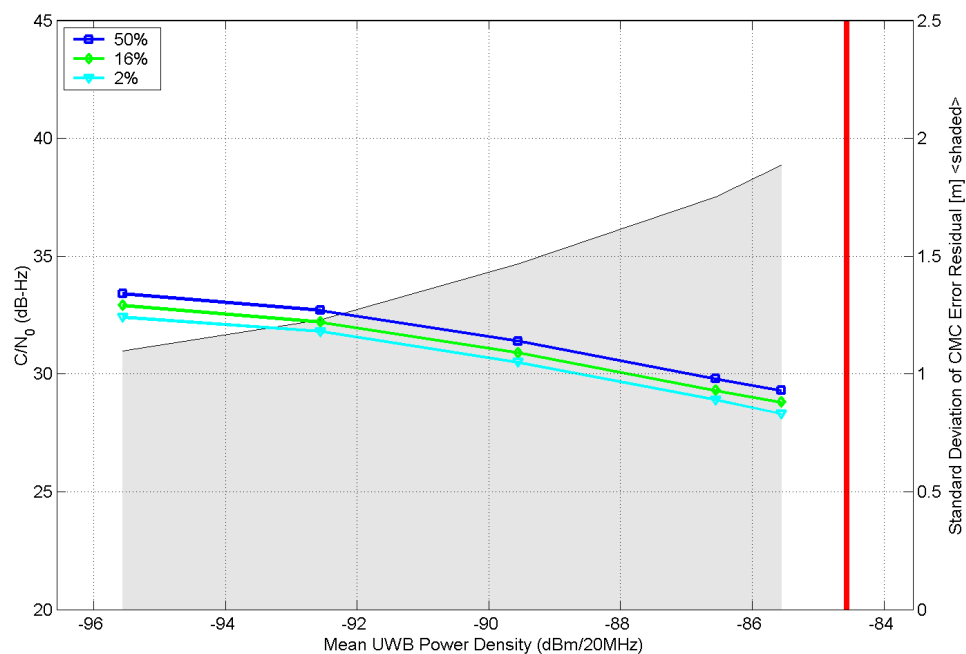


Figure B.1.28. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, 2% RRD, non-gated UWB interference.

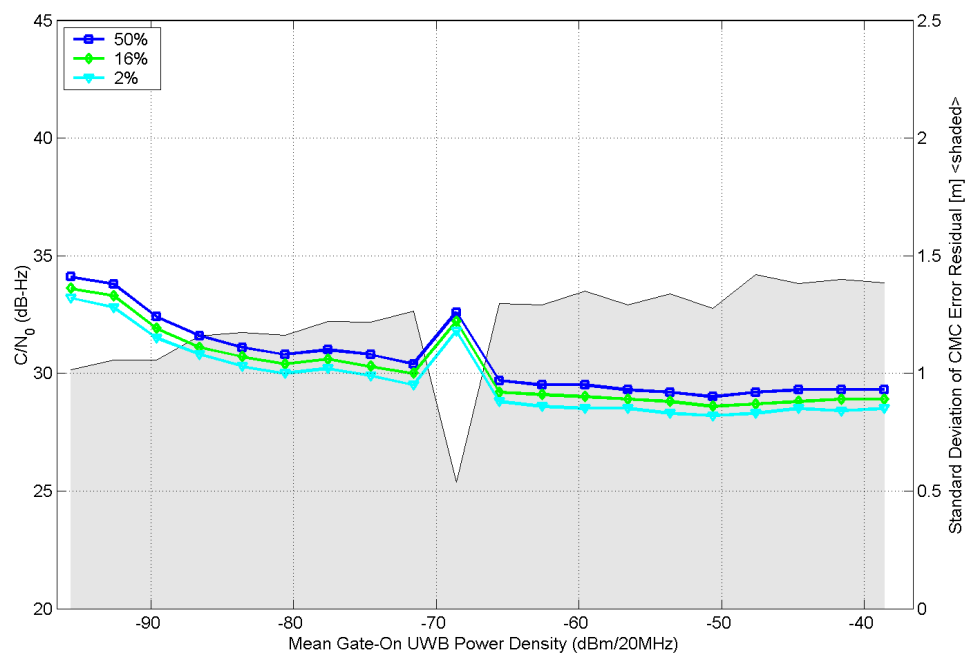


Figure B.1.29. Measured GPS parameters (Rx 3) as a function of 5-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.

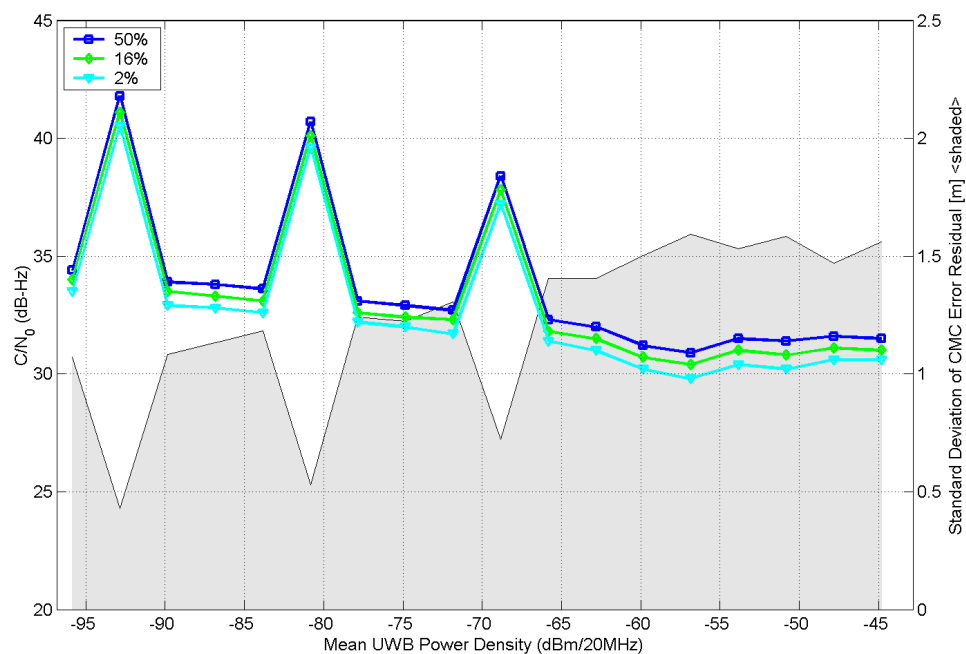


Figure B.1.30. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, 2% RRD, non-gated UWB interference.

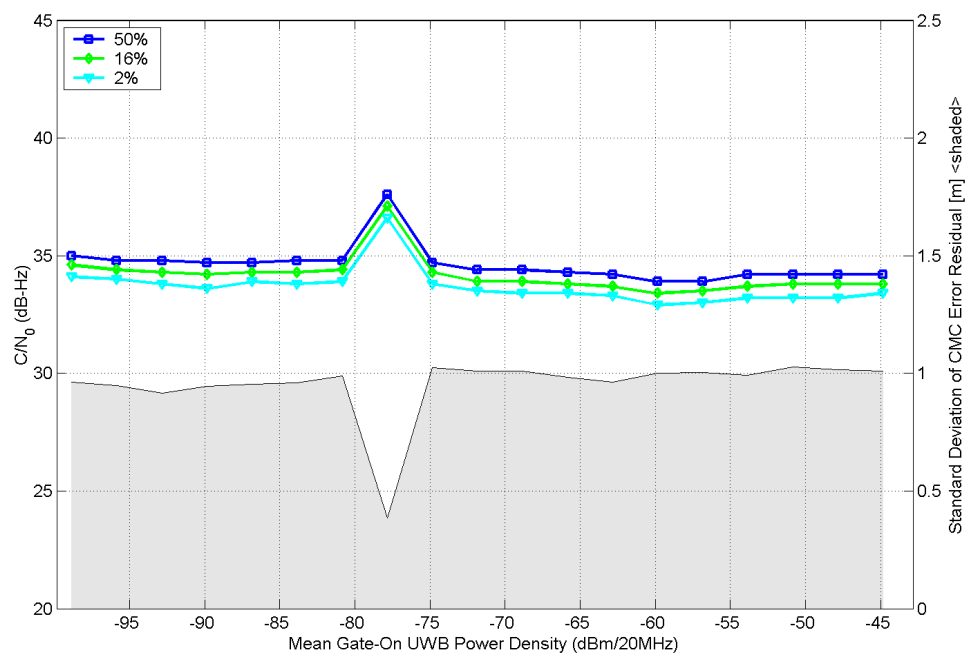


Figure B.1.31. Measured GPS parameters (Rx 3) as a function of 1-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.

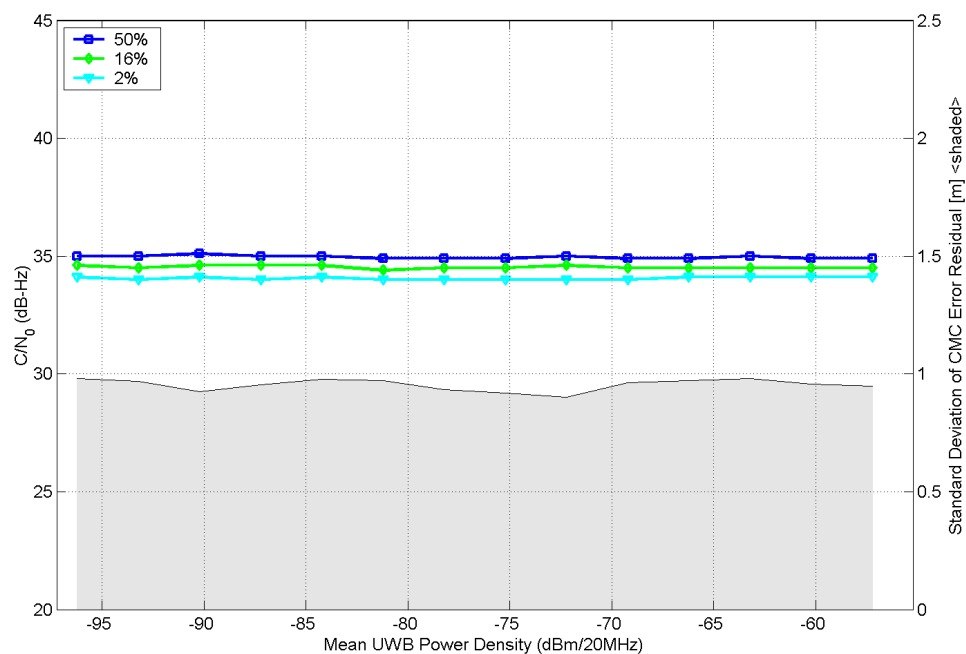


Figure B.1.32. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, 2% RRD, non-gated UWB interference.

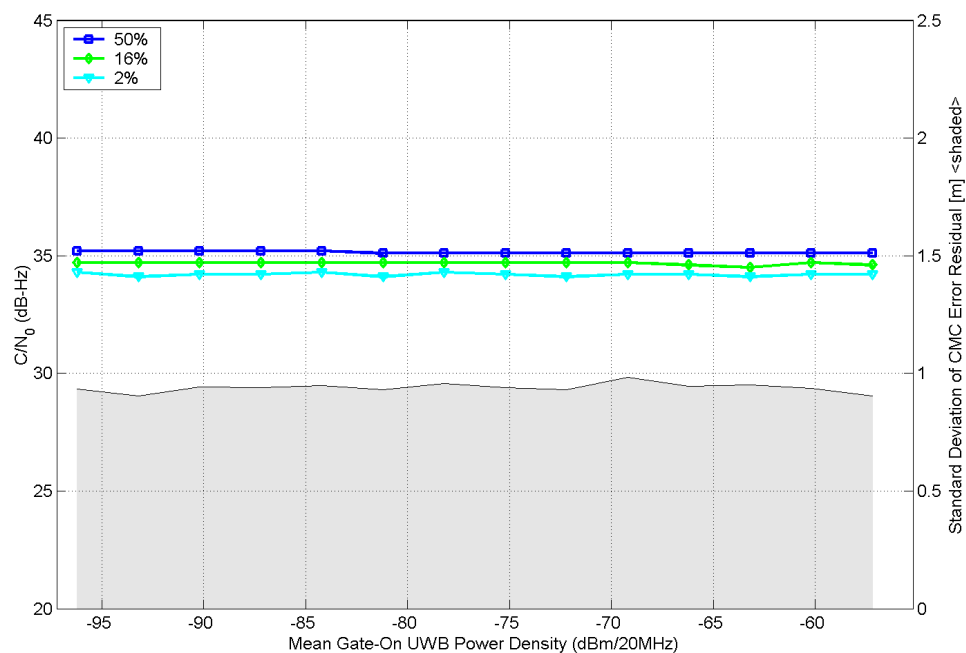


Figure B.1.33. Measured GPS parameters (Rx 3) as a function of 0.1-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.

B.2. TSO-C129a Aviation Receiver (Rx 4) Results

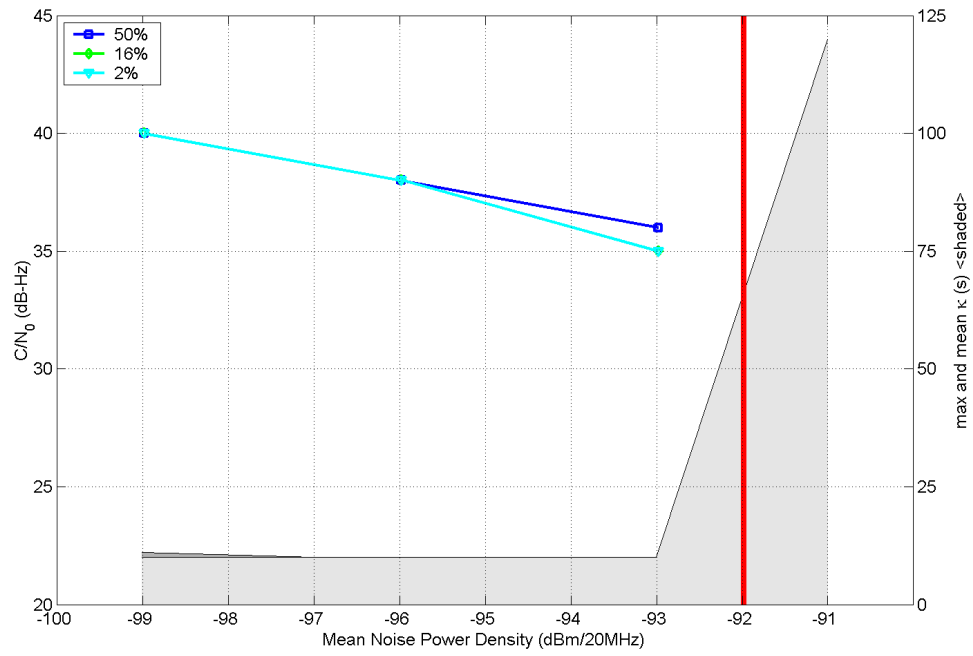


Figure B.2.1. Measured GPS parameters (Rx 4) as a function of Gaussian-noise interference.

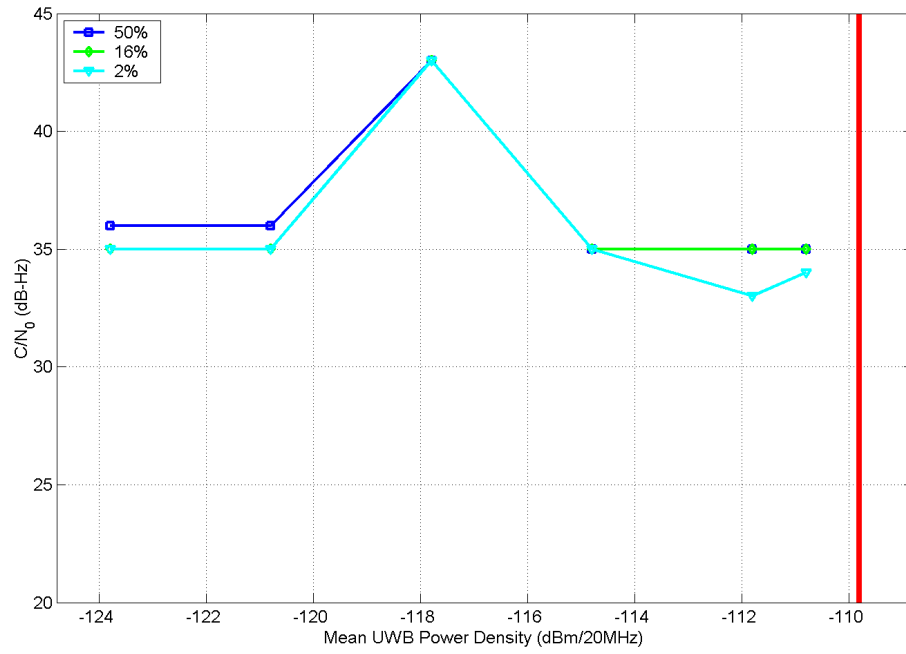


Figure B.2.2. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, UPS, non-gated UWB interference.

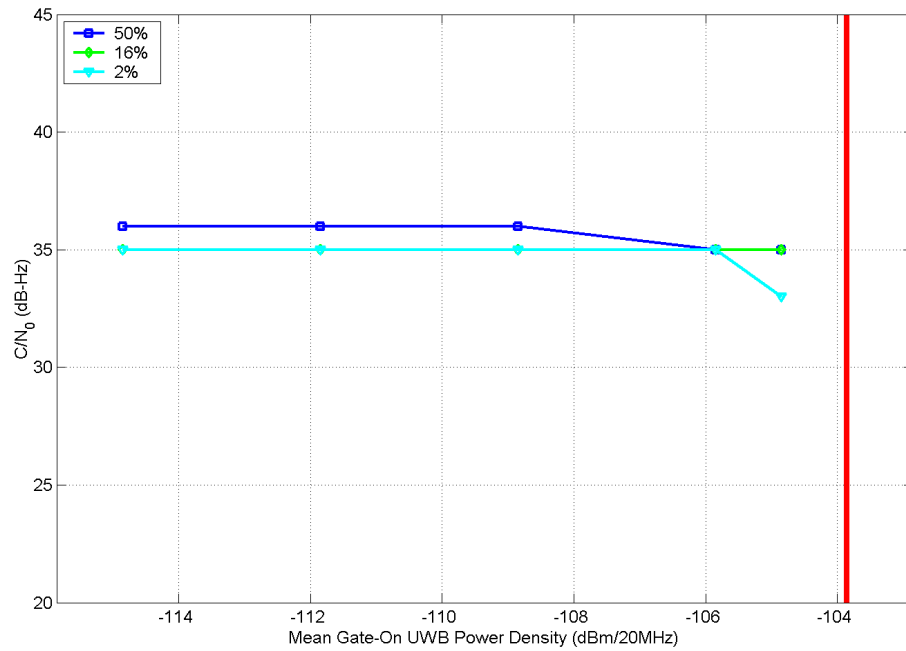


Figure B.2.3. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

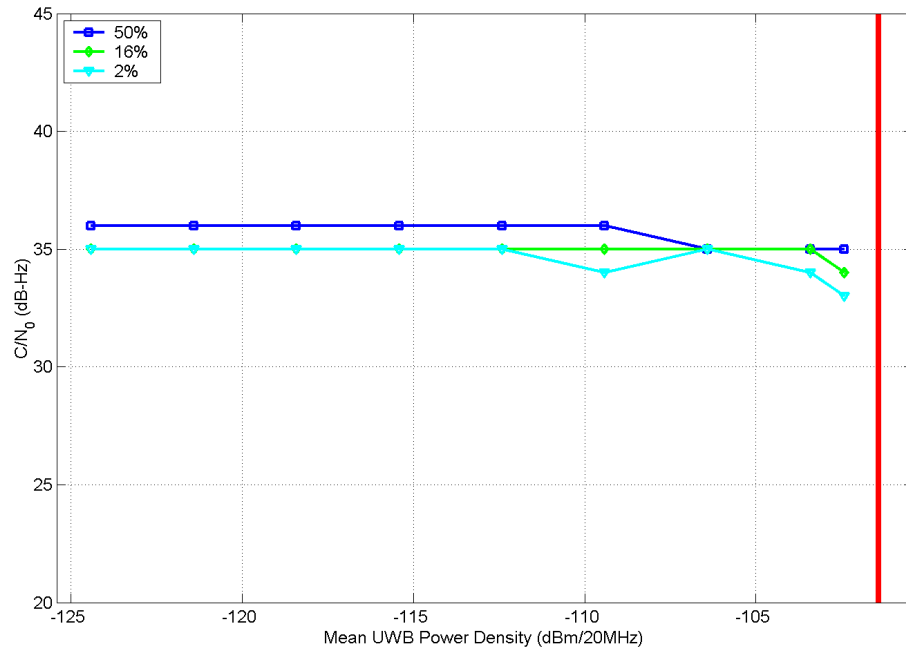


Figure B.2.4. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, UPS, non-gated UWB interference.

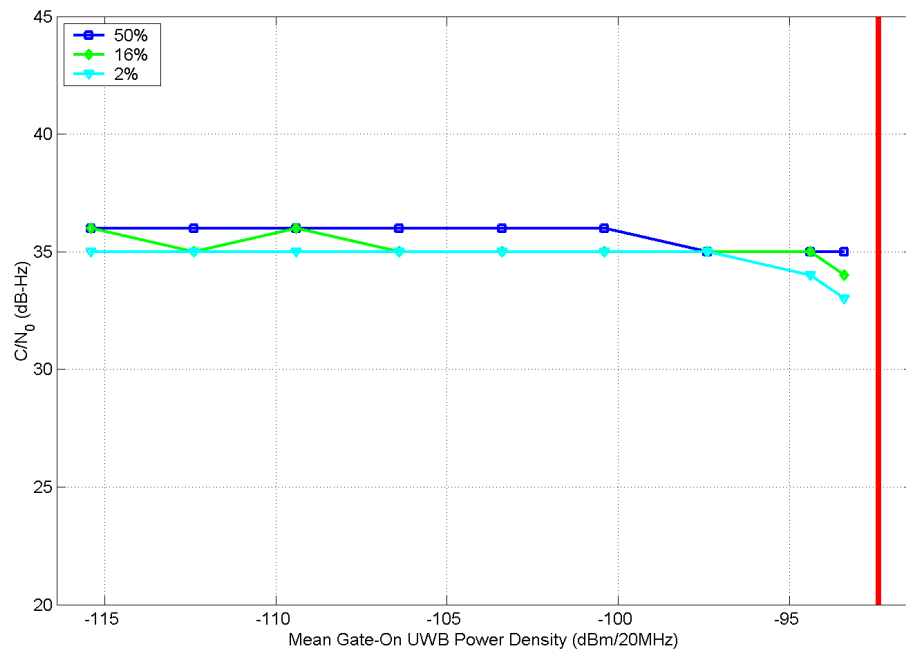


Figure B.2.5. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

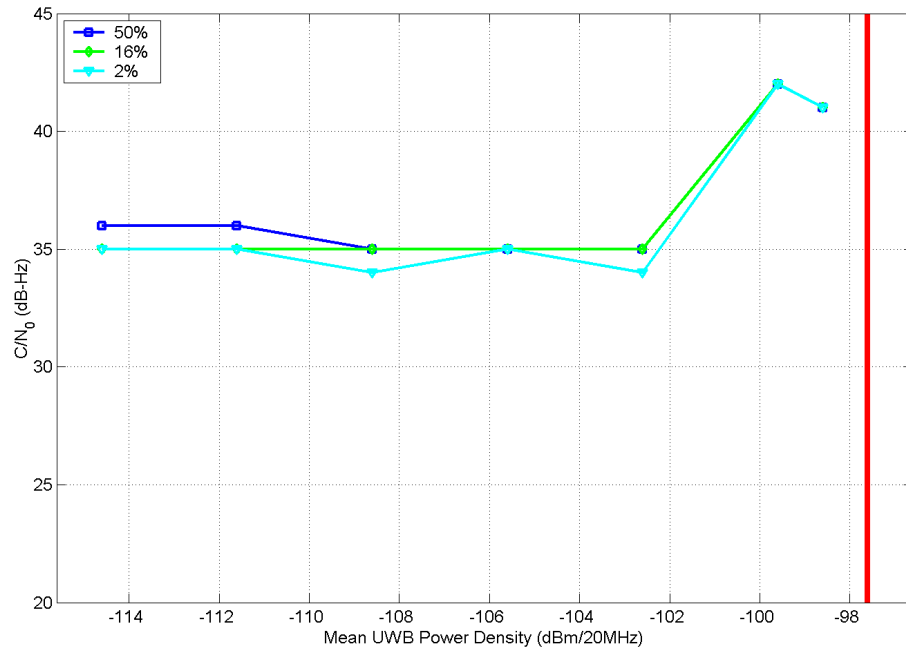


Figure B.2.6. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, UPS, non-gated UWB interference.

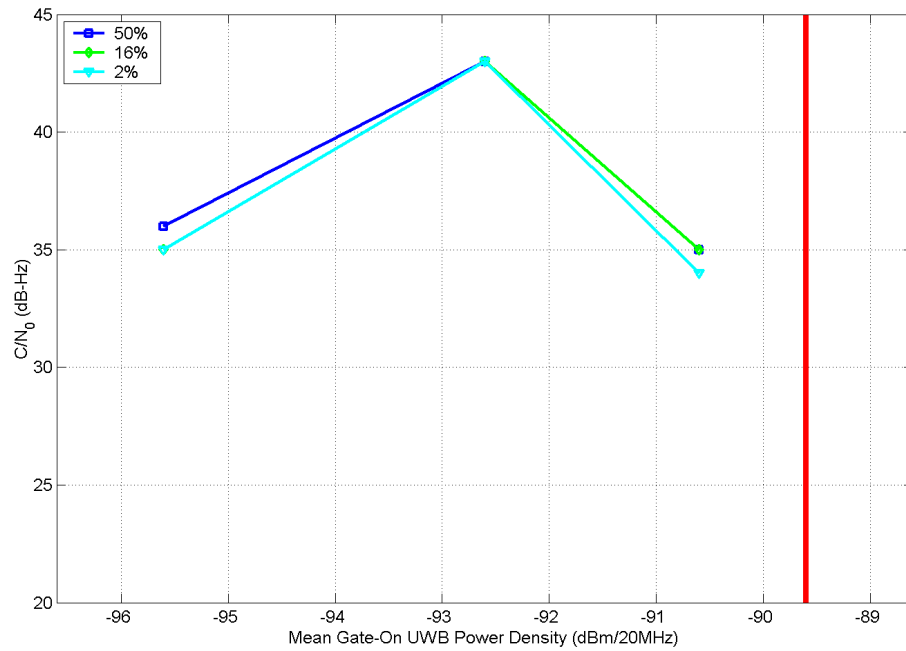


Figure B.2.7. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

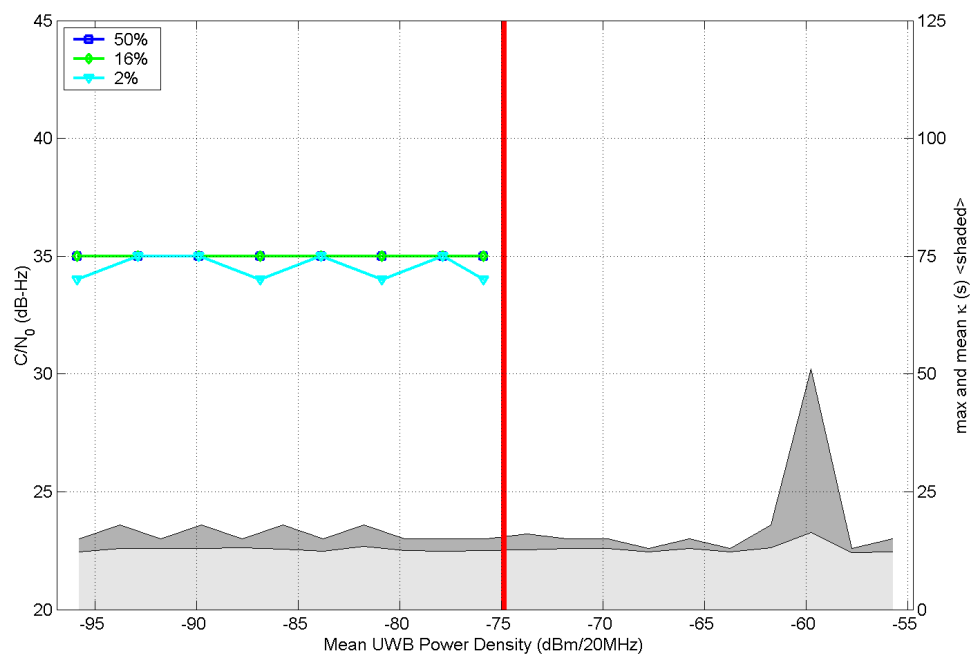


Figure B.2.8. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, UPS, non-gated UWB interference.

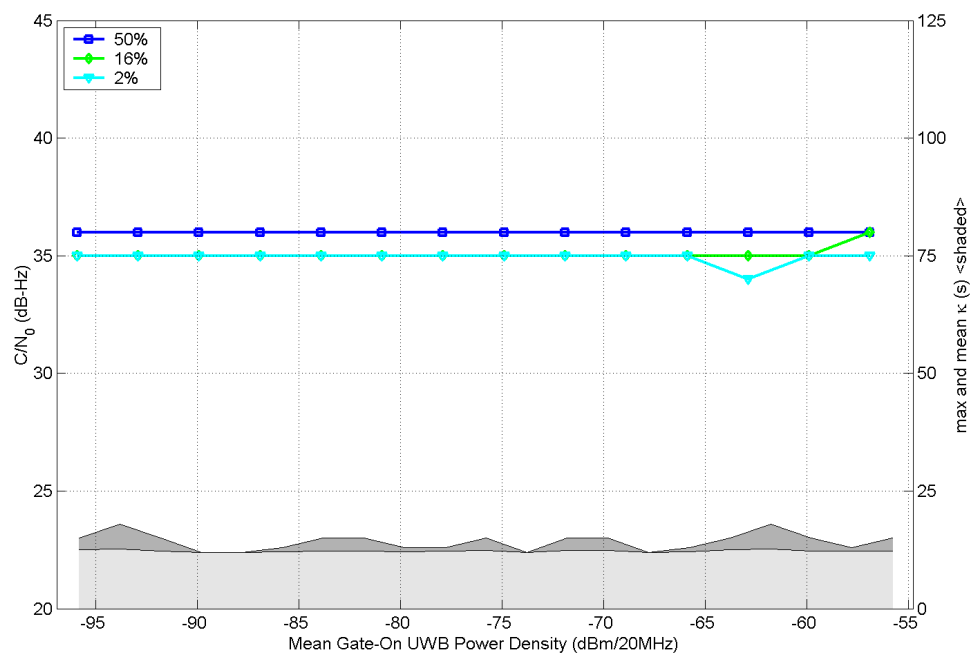


Figure B.2.9. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, UPS, gated (20% duty cycle) UWB interference.

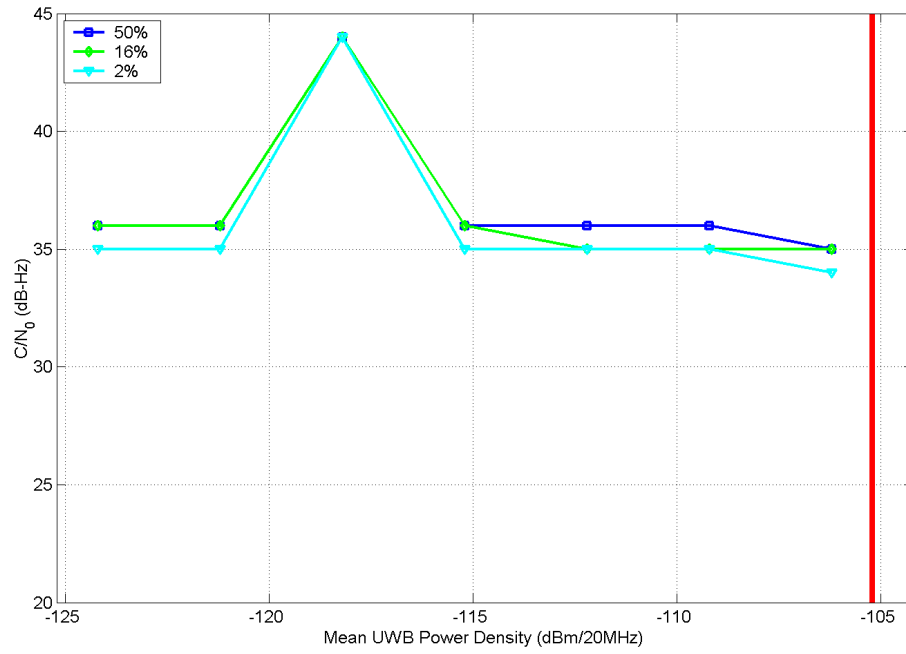


Figure B.2.10. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, OOK, non-gated UWB interference.

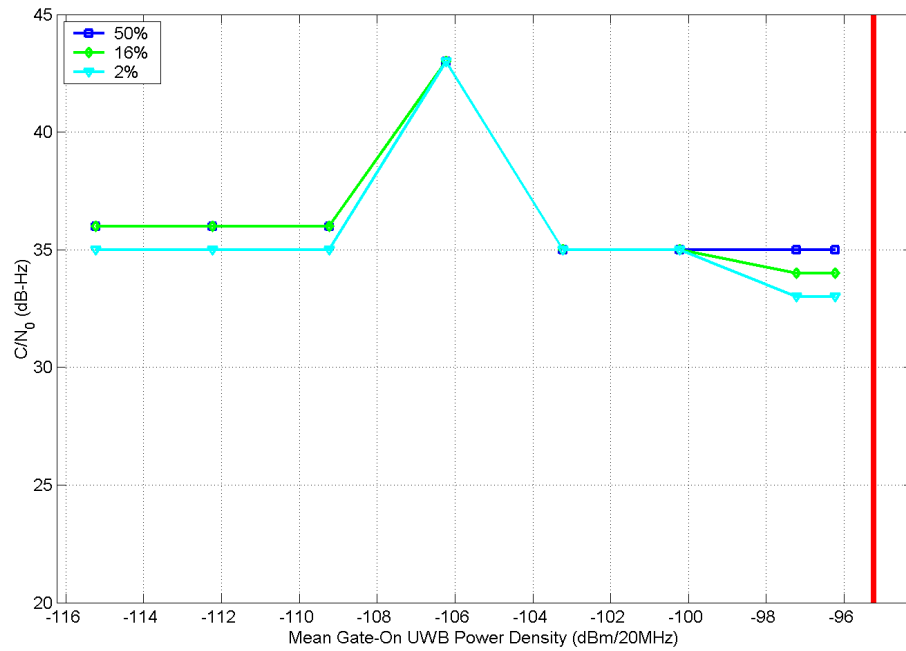


Figure B.2.11. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

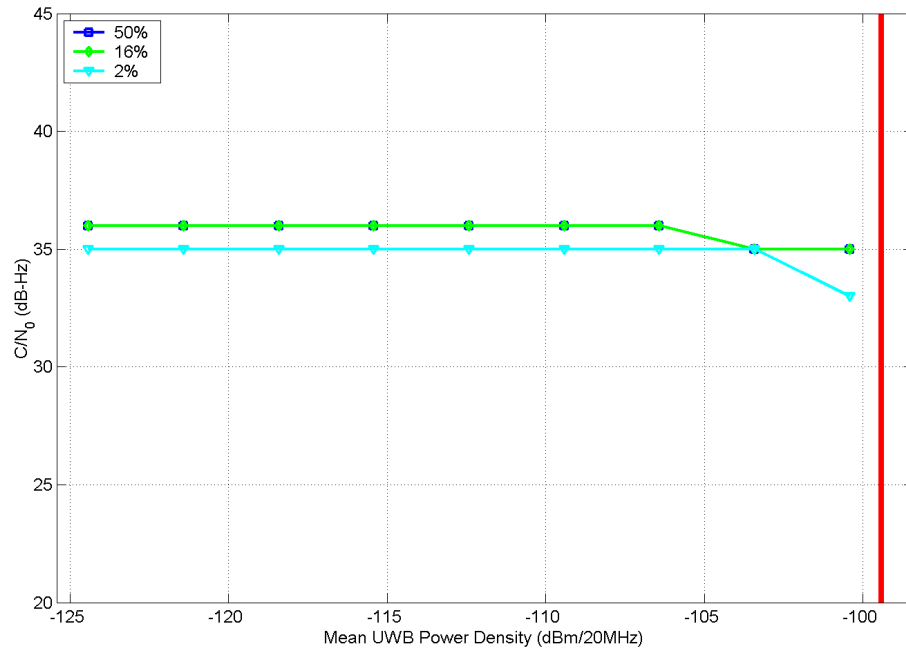


Figure B.2.12. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, OOK, non-gated UWB interference.

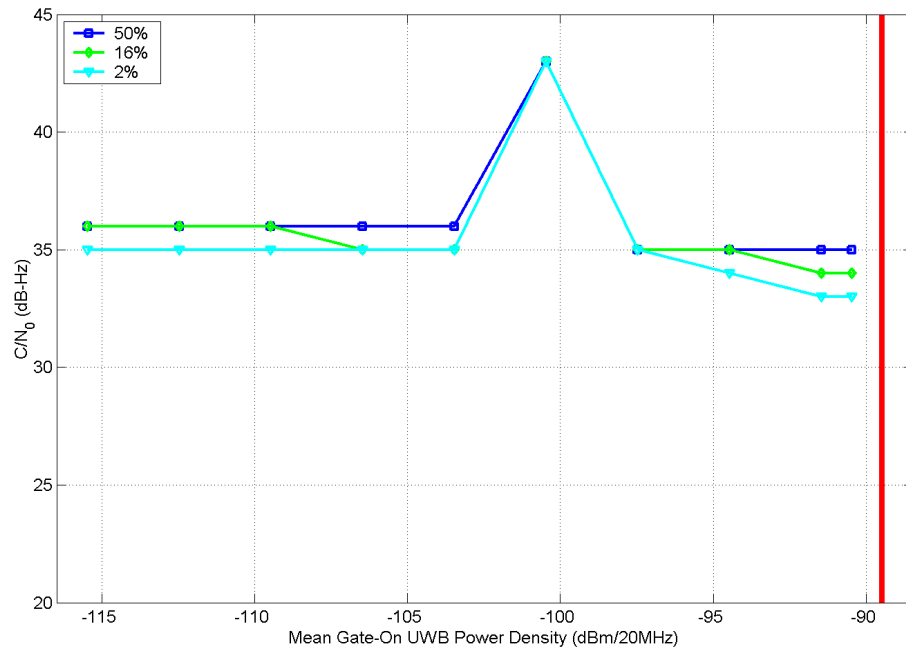


Figure B.2.13. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

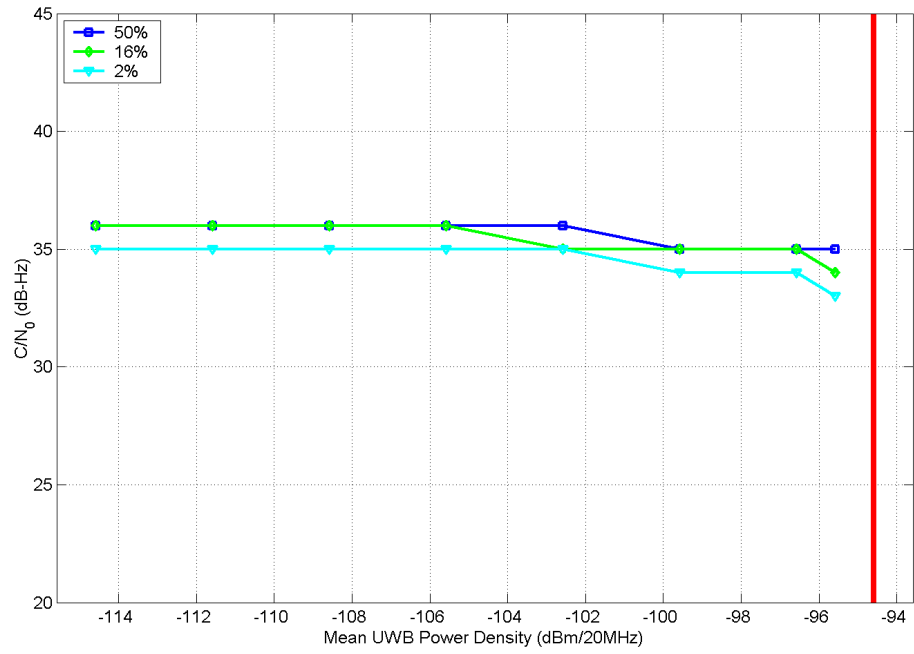


Figure B.2.14. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, OOK, non-gated UWB interference.

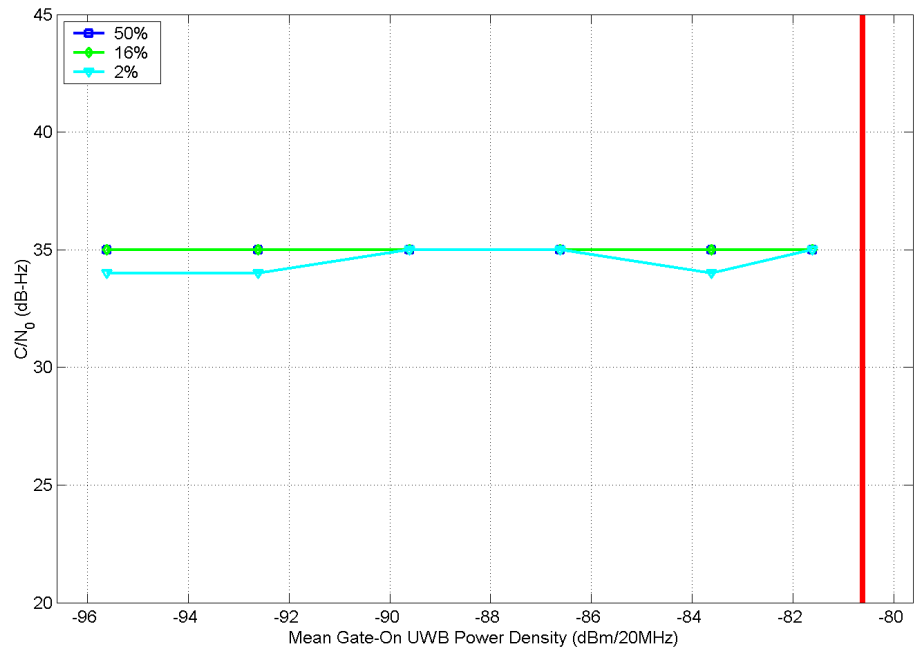


Figure B.2.15. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

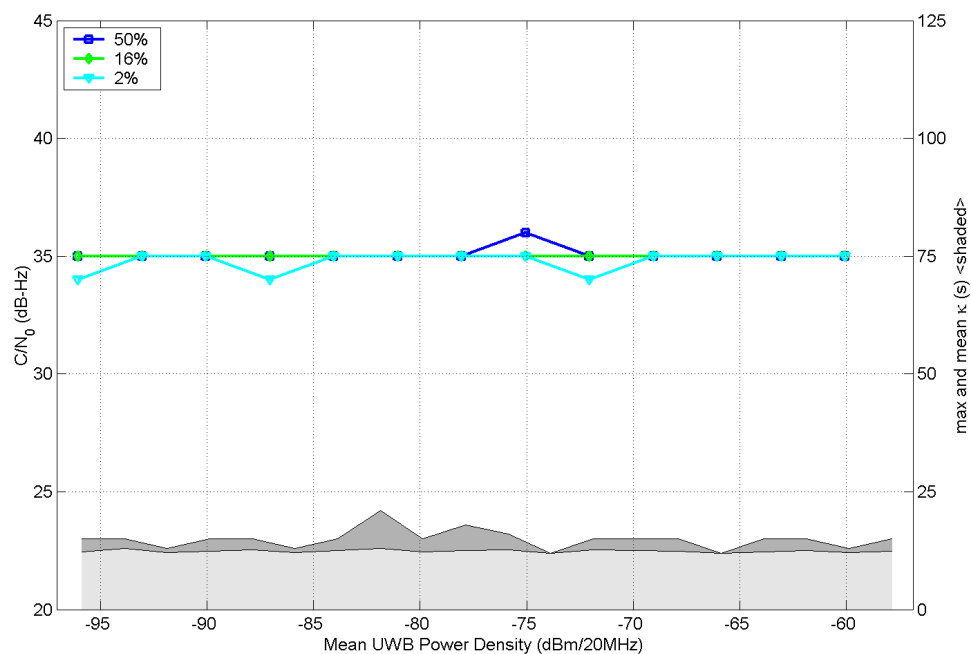


Figure B.2.16. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, OOK, non-gated UWB interference.

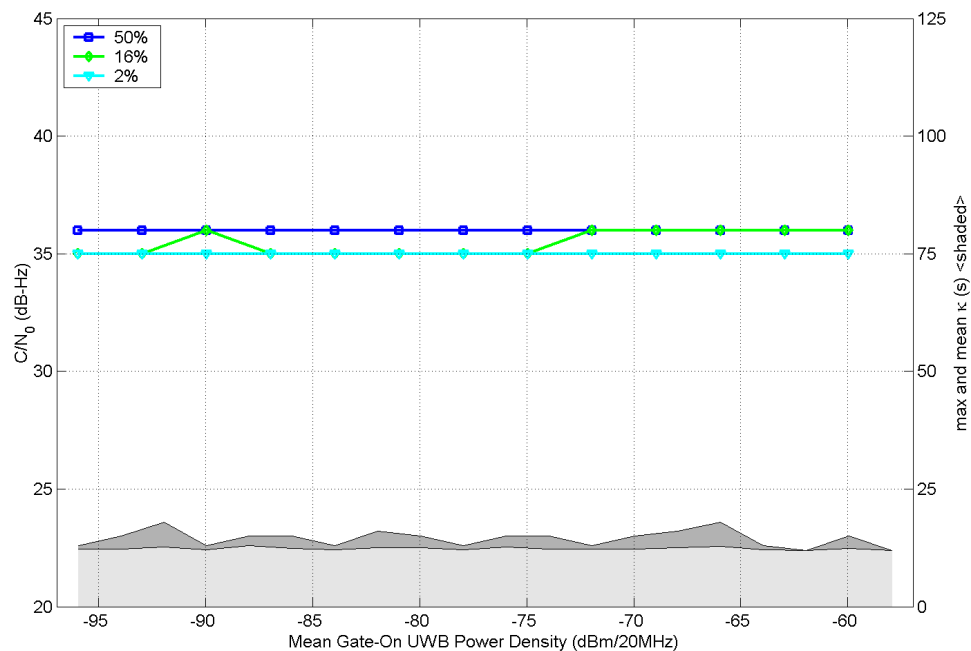


Figure B.2.17. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, OOK, gated (20% duty cycle) UWB interference.

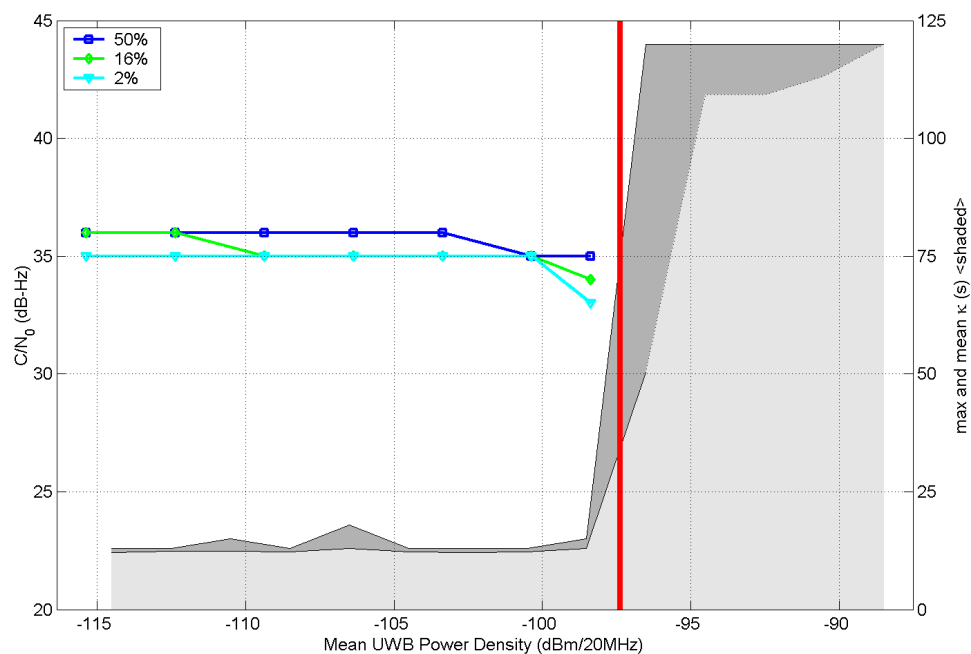


Figure B.2.18. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, 50% ARD, non-gated UWB interference.

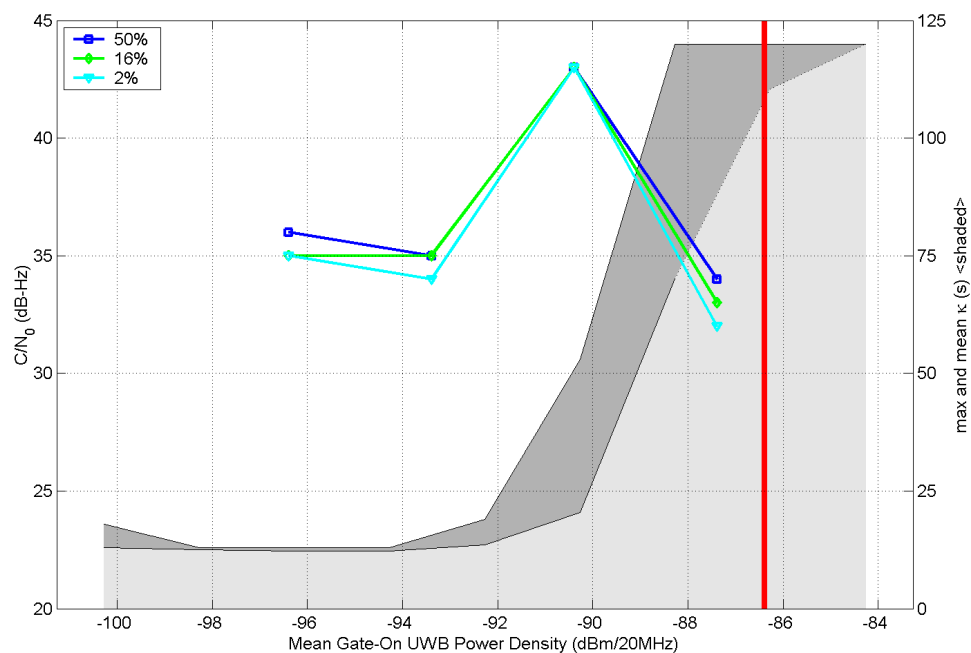


Figure B.2.19. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, 50% ARD, gated (20% duty cycle) UWB interference.

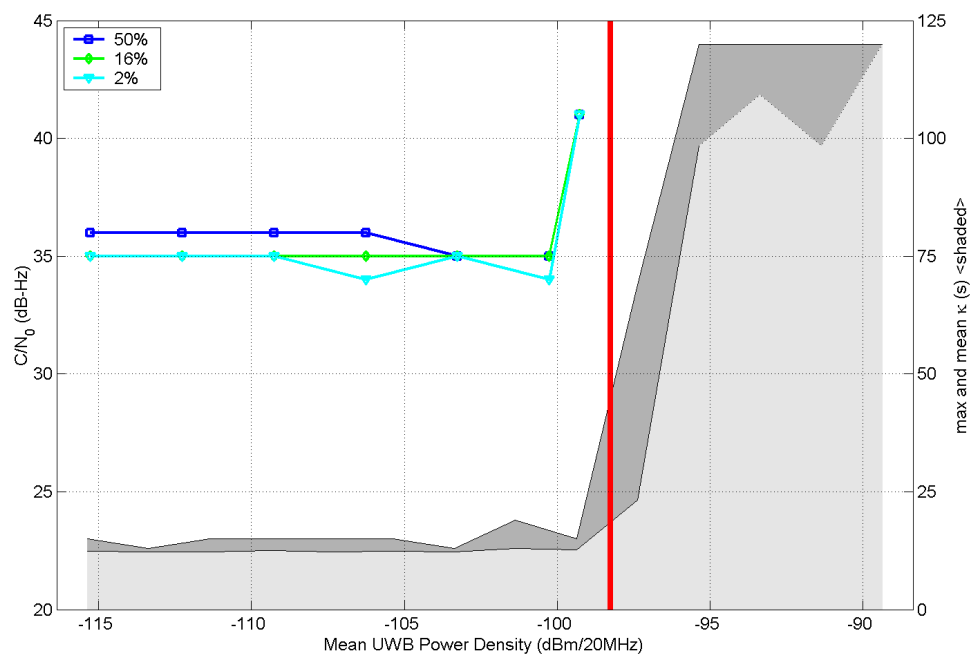


Figure B.2.20. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, 50% ARD, non-gated UWB interference.

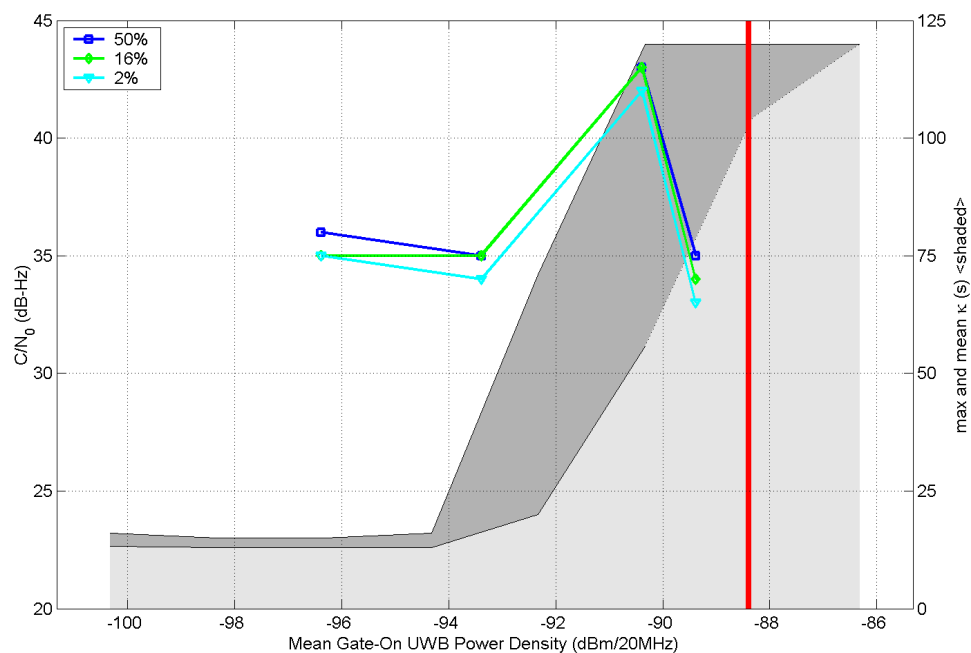


Figure B.2.21. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, 50% ARD, gated (20% duty cycle) UWB interference.

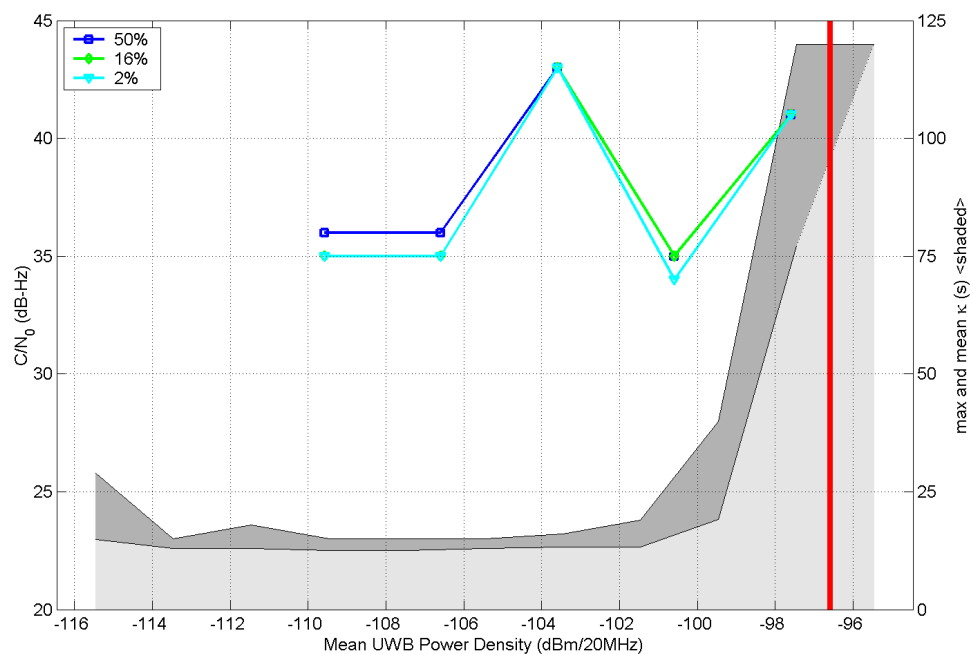


Figure B.2.22. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, 50% ARD, non-gated UWB interference.

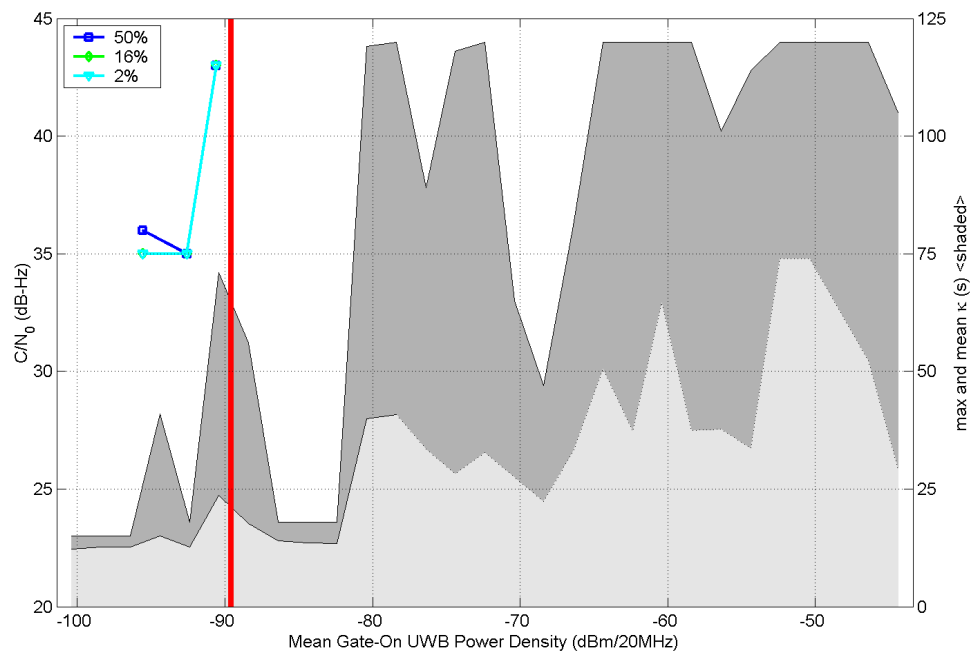


Figure B.2.23. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, 50% ARD, gated (20% duty cycle) UWB interference.

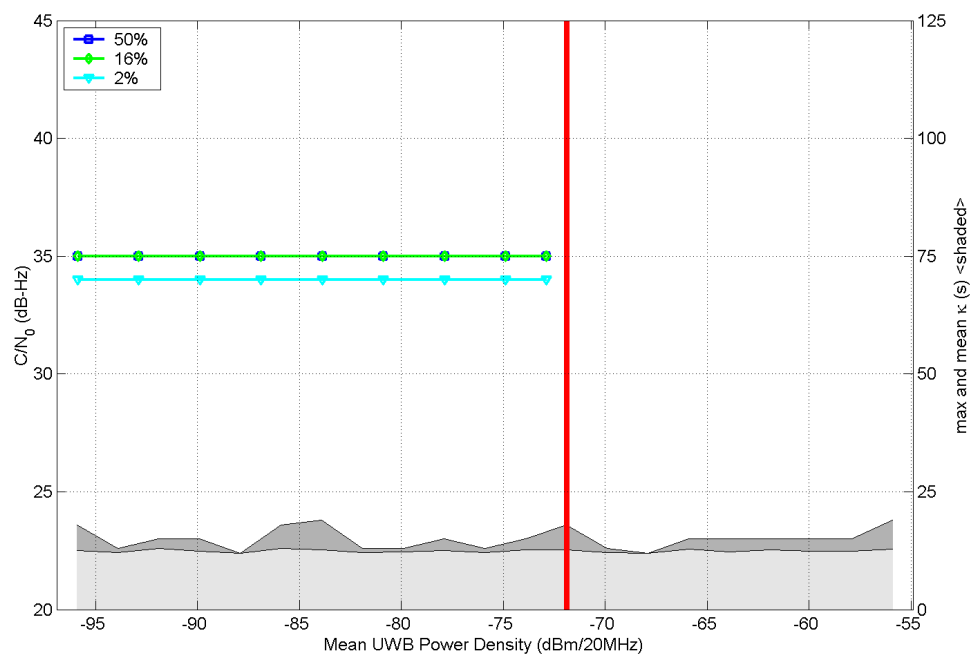


Figure B.2.24. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, 50% ARD, non-gated UWB interference.

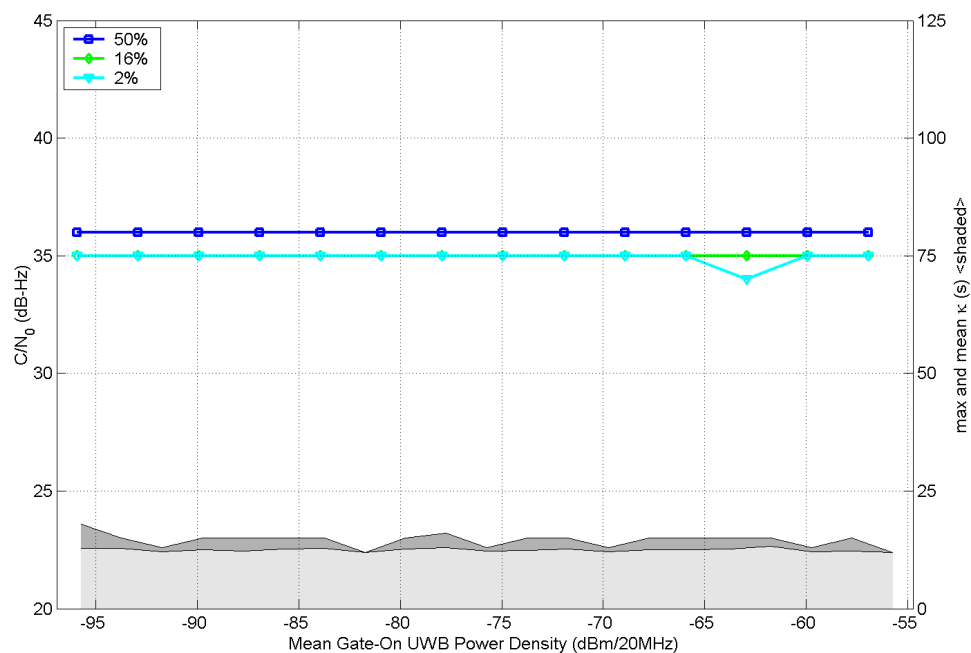


Figure B.2.25. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, 50% ARD, gated (20% duty cycle) UWB interference.

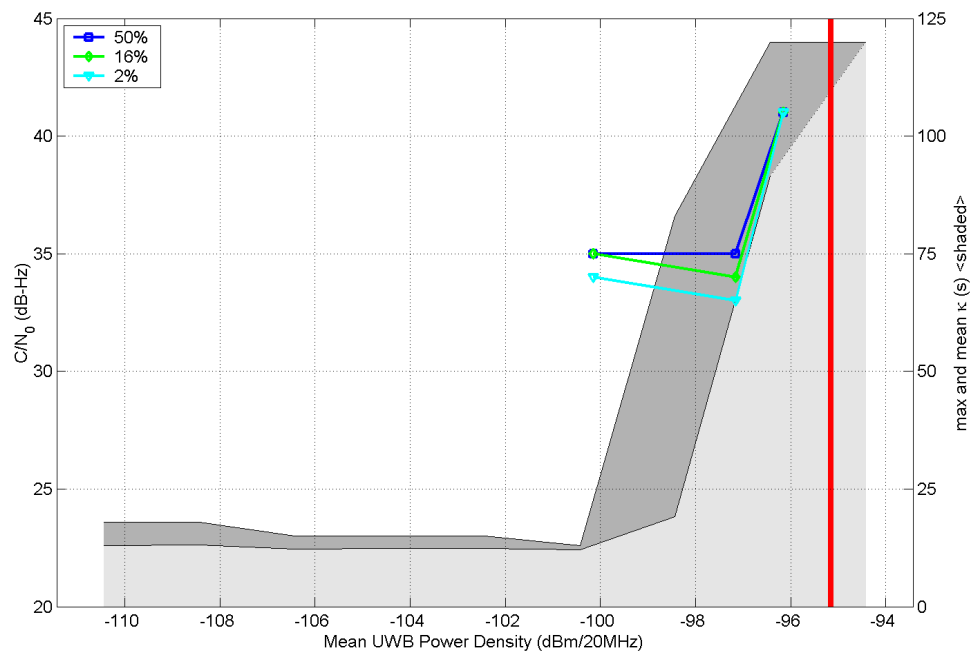


Figure B.2.26. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, 2% RRD, non-gated UWB interference.

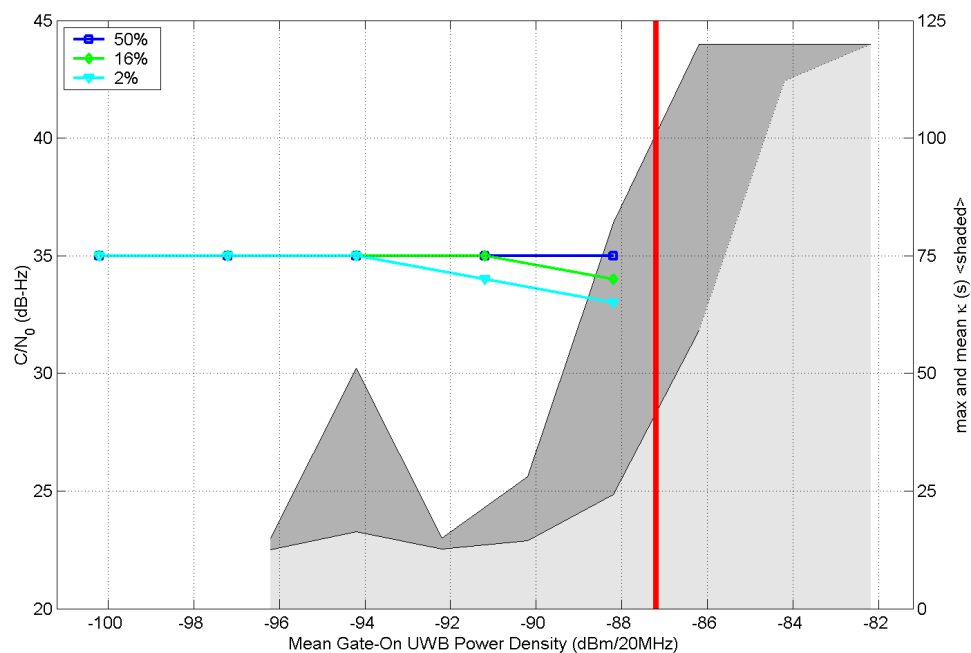


Figure B.2.27. Measured GPS parameters (Rx 4) as a function of 20-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.

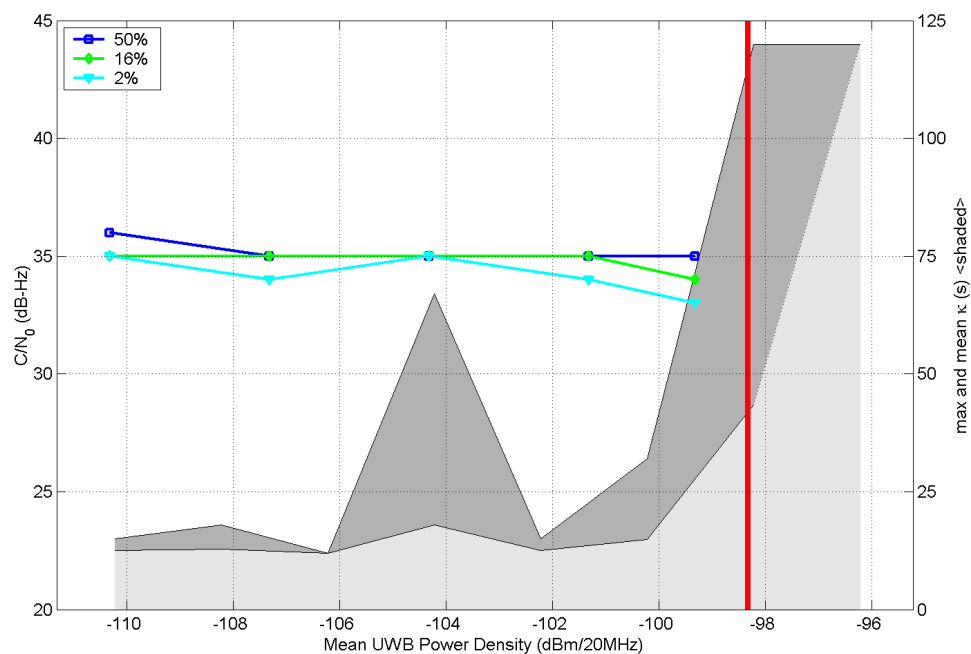


Figure B.2.28. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, 2% RRD, non-gated UWB interference.

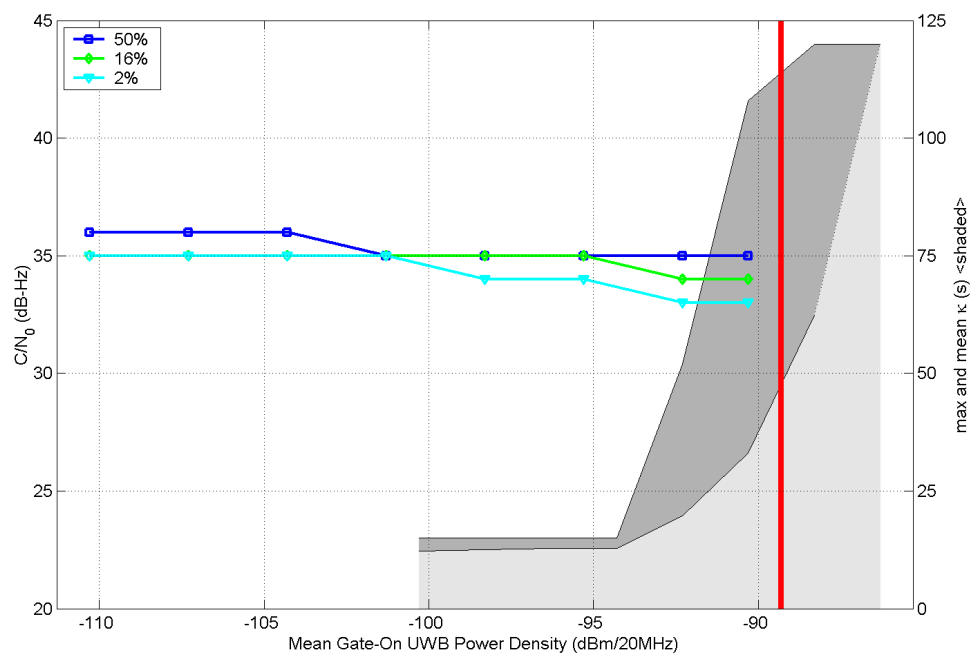


Figure B.2.29. Measured GPS parameters (Rx 4) as a function of 5-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.

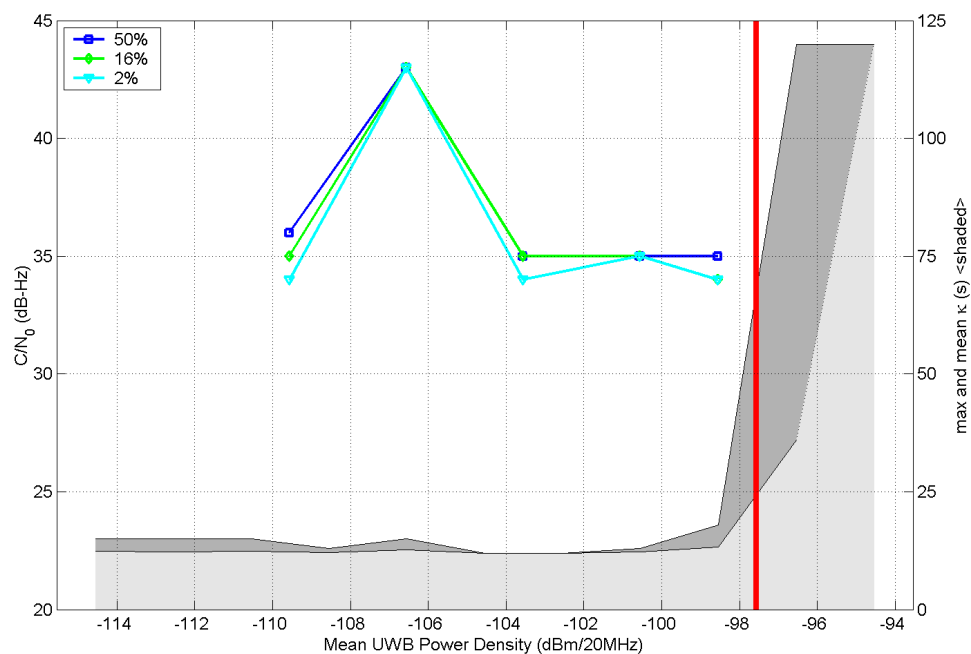


Figure B.2.30. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, 2% RRD, non-gated UWB interference.

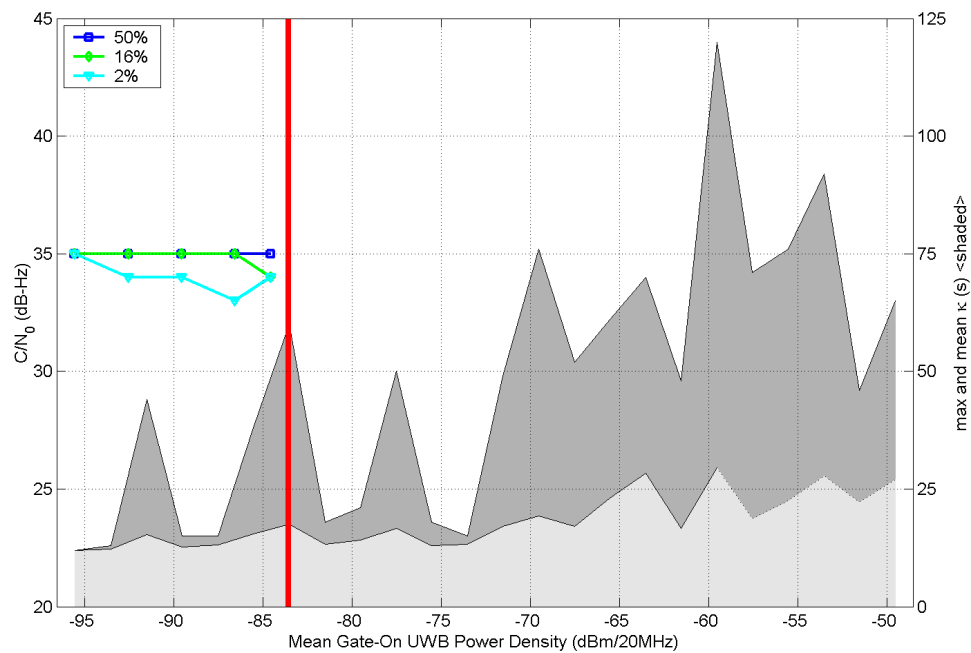


Figure B.2.31. Measured GPS parameters (Rx 4) as a function of 1-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.

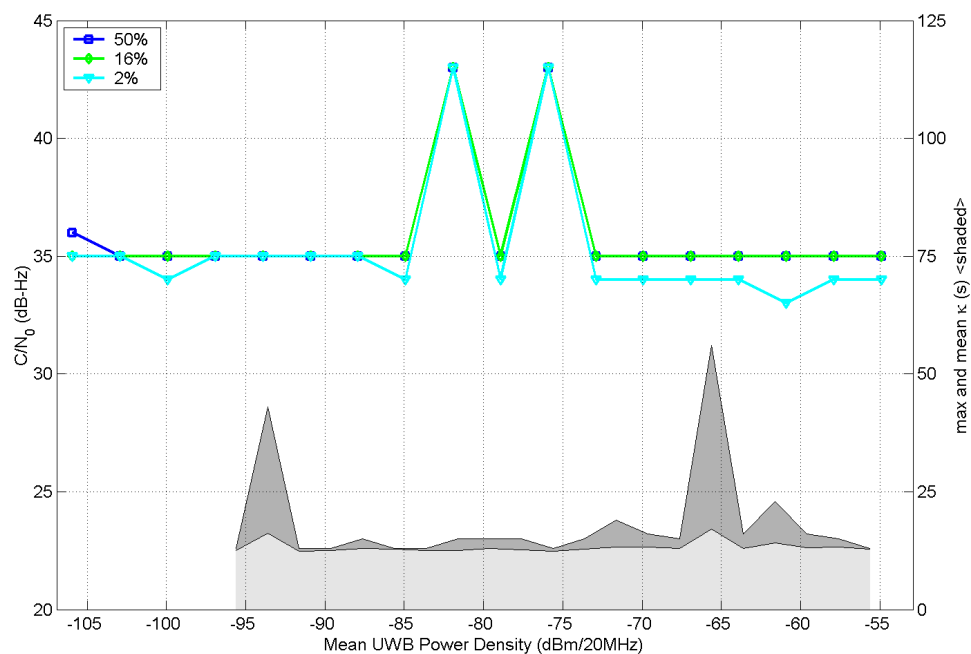


Figure B.2.32. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, 2% RRD, non-gated UWB interference.

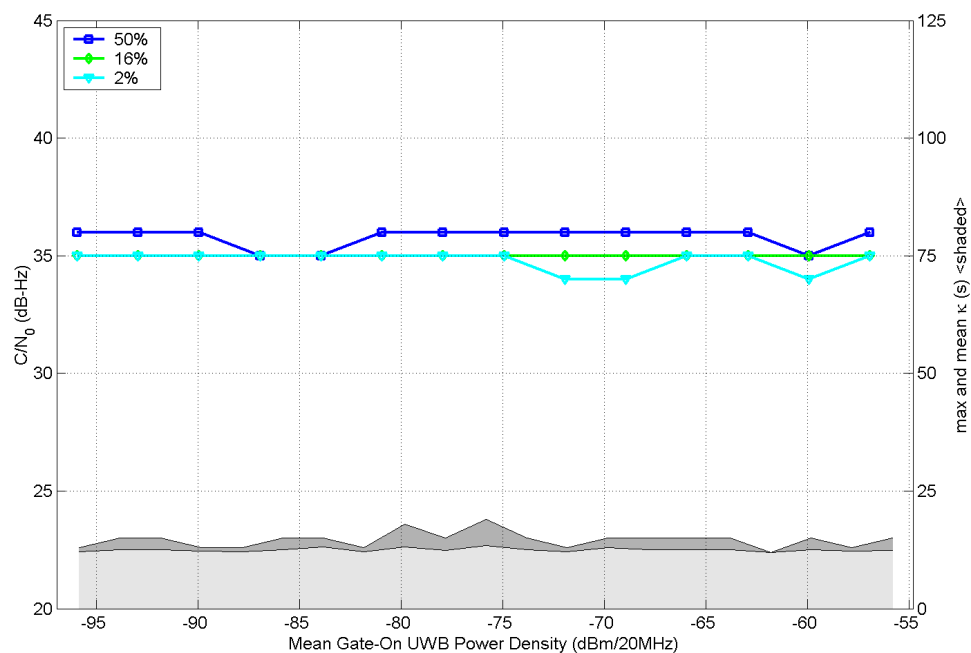


Figure B.2.33. Measured GPS parameters (Rx 4) as a function of 0.1-MHz PRF, 2% RRD, gated (20% duty cycle) UWB interference.